GILPIN GROUP
Environmental Consulting and Planning

EAST KENTUCKY POWER COOPERATIVE

(Kentucky 59 Fayette)

ENVIRONMENTAL REPORT FOR THE PROPOSED GM TO MEMPHIS JUNCTION ELECTRIC TRANSMISSION LINE

June 2006

2087 Ketchner Road • Wellsville, New York 14895 • Phone: (585) 593-5696

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1.0 INTRODUCTION

East Kentucky Power Cooperative (EKPC) of Winchester, Kentucky is a non-profit electric generation and transmission cooperative headquartered in Winchester, Kentucky that provides electric power to 16 locally based electric distribution cooperatives. The distribution cooperatives distribute power to over 489,000 electric consumers in 89 counties located across the central and eastern portions of Kentucky. EKPC has requested financing from the Rural Utility Service, an agency that administers the U.S. Department of Agriculture's Rural Development programs (USDA Rural Development), to construct and maintain a 161 kilovolt (kV) electric transmission line in central Warren County, Kentucky. The USDA Rural Development must complete an environmental analysis and prepare an Environmental Assessment (EA) in accordance with its *Environmental Policy and Procedures for Implementing the National Environmental Policy Act* (7 CFR Part 1794), prior to approving the financing assistance for the proposed project.

GILPIN GROUP - Environmental Consulting & Planning of Wellsville, New York has been contracted by EKPC to conduct an environmental investigation and analysis, and prepare a report that can be adopted by the USDA Rural Development as an EA to meet their environmental regulations for complying with the *National Environmental Policy Act of 1969* (NEPA). The EA will serve as a detailed written record of the environmental analysis completed for the proposed project and will be used to determine whether preparation of an Environmental Impact Statement is necessary. The EA incorporates a detailed description of the proposed project, and copies of portions of topographic maps locating the project, along with a discussion of the need and alternatives considered for the proposed action. A discussion of the affected environment within the proposed project areas, the environmental impact of the proposed action, and the mitigation of potential environmental impacts is also included.

2.0 PROPOSED ACTION & FEDERAL DECISION TO BE MADE

EKPC has requested financing assistance from USDA Rural Development for the proposed construction of an electric transmission line in central Warren County, Kentucky. The proposed federal action related to EKPC's proposed electric project would be USDA Rural Development's granting of financing assistance for the construction of the proposed facilities. The USDA Rural Development's decision to be made based on the environmental analysis outlined in the EA would be whether to implement the proposed action and grant the financing assistance for the construction of the proposed transmission line.

3.0 PROJECT DESCRIPTION

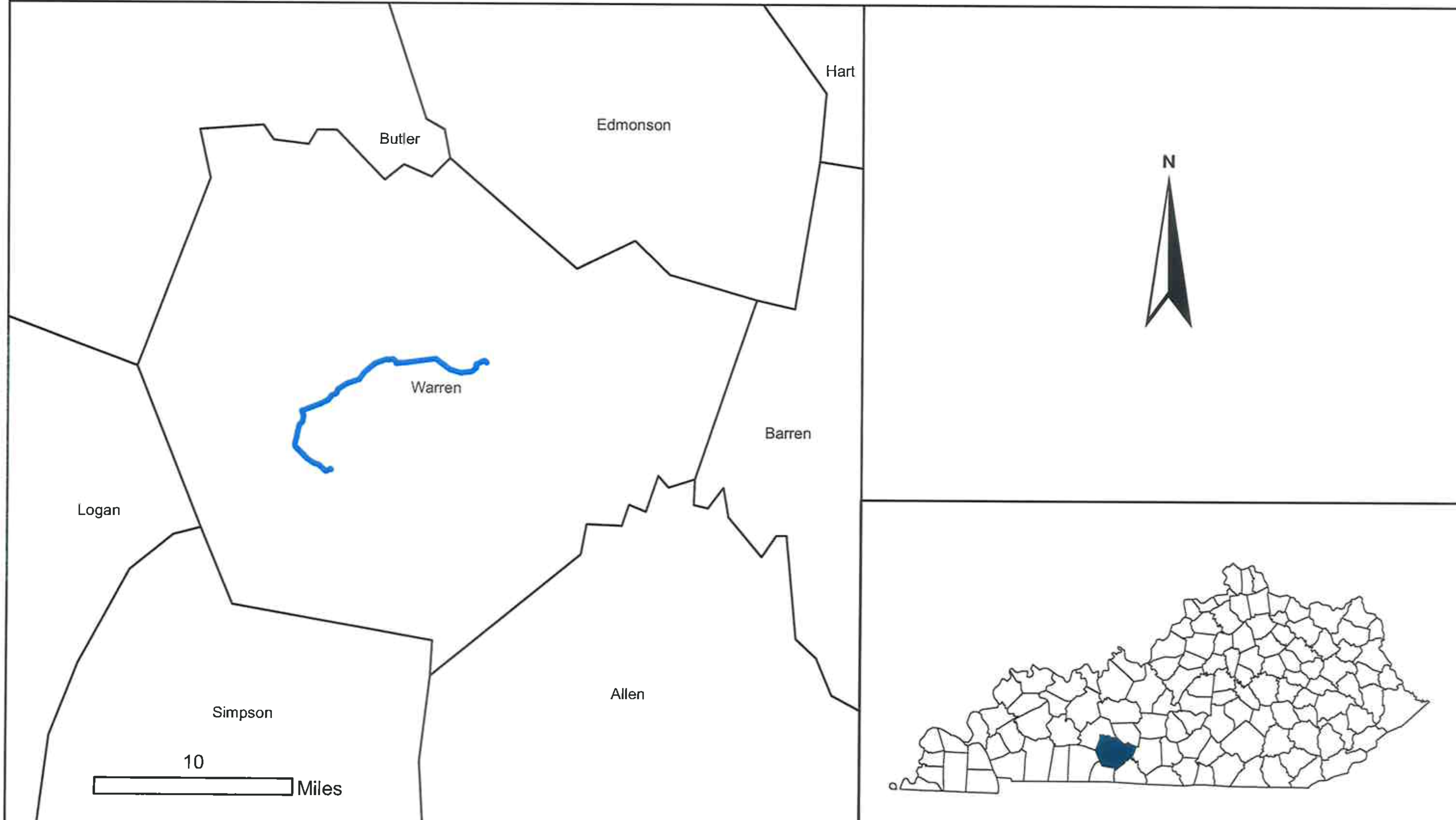
The proposed GM to Memphis Junction Electric Transmission Line would be designed for 161 kilovolt (kV) operation and would be 15.21 miles in length. The new transmission line would be supported by approximately 195 single, and H-frame double and triple, Corten tubular steel pole structures (See TRANSMISSION SUPPORT STRUCTURE DIAGRAMS, Appendix B) that would range in height from 95 to 100 feet aboveground. The average span between support structures would be 600 feet. The majority of the proposed new transmission line would be constructed to double circuit specifications with crosses arms installed on both sides of the support poles (See TRANSMISSION SUPPORT STRUCTURE DIAGRAMS, Double Circuit Tangent Structure, Appendix B) but would be operated as a single circuit line with electrical conductors only strung on one side until the electric load in the area warrants operation of a second circuit. However, roughly one quarter of the proposed line would be constructed as single circuit with cross arms and conductors only installed on one side of the support structures (See TRANSMISSION SUPPORT STRUCTURE DIAGRAMS, Appendix B).

Construction of the new line would involve rebuilding a 5.17 mile section of existing double circuit 69 kV transmission line and a 3.39 mile section of existing single circuit 69 kV transmission line, both supported by single wood pole structures on existing 100 foot wide ROWs. The existing lines within these two sections would be dismantled and replaced by the proposed new transmission line. The proposed new line would be located on the existing 100 foot wide ROWs within these two sections and would not require any additional ROW width. The balance of the proposed new line would be new construction, 2.41 miles of which would require a new 100 foot wide ROW and would parallel an existing electric transmission line, and 4.24 miles of which would require a new 100 foot wide ROW, 50 feet of which would be shared with another proposed new electric transmission line. The ROW for the proposed transmission line would encompass approximately 184.4 acres of land, of which 118.4 acres would utilize existing ROWs. The total estimated cost of constructing the proposed new transmission line would be $5,900,000.

3.1 PROJECT LOCATION

The proposed project area is located in central Warren County, Kentucky (See *Project Area Location Map*, page 4). The proposed route for the new electric transmission line extends westerly following an existing electric utility line ROW from an existing substation at an automotive assembly plant located east of Bowling Green, Kentucky, to an existing electric generating station located on the southern side of the Barren River in northern

PROJECT AREA LOCATION MAP



Proposed Transmission Line Route

GM - Memphis Jct
Proposed 161kV Transmission Line
Warren County, KY
Project No. 21392

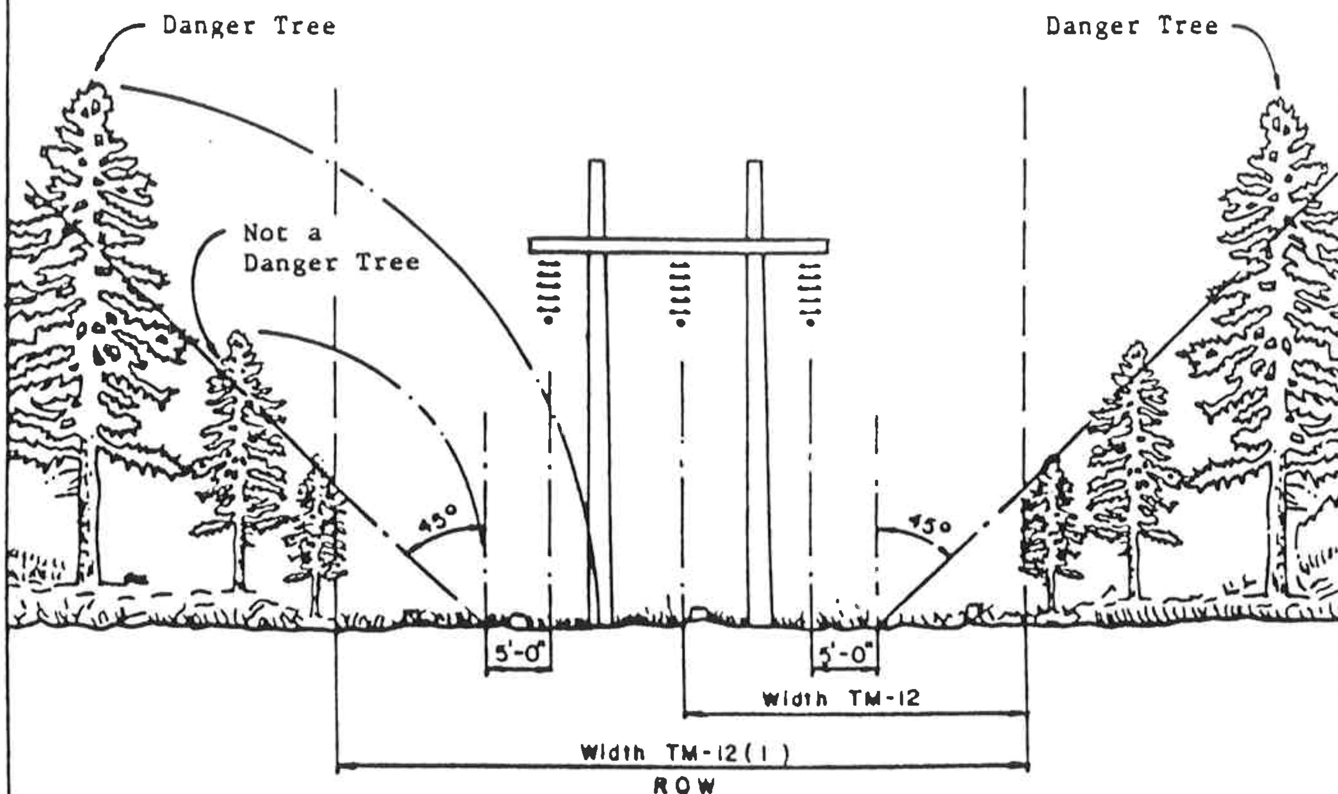
EAST KENTUCKY POWER COOPERATIVE
P.O. Box 707
Winchester, KY 40392-0707

Bowling Green. The proposed route then extends in a general southwesterly direction paralleling an existing electric transmission line from the generating station and following an existing electric transmission line ROW to a point where the route extends due south to connect to an existing electric substation southwest of Memphis Junction, Kentucky (See PROJECT REFERENCE MAPS, Appendix A).

3.2 CONSTRUCTION & MAINTENANCE PROCEDURES

3.2.1 Construction

The construction of the proposed electric transmission line is tentatively scheduled to begin in the fall and winter of 2006-07 and the estimated duration of construction would be 10 months. EKPC has determined that clearing would be required on approximately 17 percent of the proposed route for the new electric line. During the clearing of the proposed route, brush, trees and old stumps within the designated ROW would be cut to a maximum height of four inches aboveground using chainsaws, bulldozers and/or excavators. Merchantable trees cut from the proposed ROW may be cut into commercial lengths and piled along the ROW for the landowner to utilize or sell. Trees may also be disposed of, left where they fall, windrowed, chipped or scattered depending on the requests of the landowners. Dead or living trees outside the transmission line ROW that could fall within five feet of a point underneath the outside conductor (hazard tree) would be cut to protect the line from electrical outages caused by falling trees and branches during high wind and storm events (See *Right-Of-Way Clearing Guide,* page 6). Individual trees located within sections of the proposed ROW that are not cleared may also be cut if they threaten to come into contact with the electrical conductors. The holes for the transmission line support structures would be mechanically dug and the poles placed using a digger/derrick truck. Minimal



NOTES:

1. Engineer will designate all danger trees which shall be removed or topped at option of contractor. In approximately level terrain, trees which would reach within 5 feet of a point underneath the outside conductor in falling are examples of danger trees.

2. As directed by the engineer, portions of the right-of-way (ROW) must be cut so that stumps will not prevent the passage of tractor and trucks along the ROW.

3. The unit for clearing one-half of the ROW is "WIDTH TM-12."

4. The unit for clearing the full ROW is "WIDTH TM-12(1)."

5. The unit for clearing danger trees is "TM-13."

		TRANSMISSION ROW CLEARING	
		RIGHT-OF-WAY CLEARING GUIDE	
NO.	REVISION	Aug., 1986	TM-12,-12(1),-13

blasting may be necessary in areas where the truck cannot dig through rock that could be present; however, blasting would only be used as a last resort. The diameter of the augered holes would be three to four feet in width and the depth of the holes would be 14 to 23 feet holes depending on the height of the poles. The holes around the poles would be backfilled with a dense grade material, such as gravel. Concrete would not be used to fill the holes. The dirt taken from the hole would be disposed of or spread around the structure. The electrical conductor would be strung using a pulley system along with a truck mounted conductor spool and tensioner, or a helicopter. Appropriate soil erosion and sedimentation control procedures, such as seeding and mulching, and/or the utilization of berms, staked straw bales and silt fences, would be implemented during and after the construction of the proposed transmission line in areas denuded of vegetation.

Access to and from the transmission line ROW during construction and maintenance procedures would be from public and private roads in the project area. Prior to the use of any private roads, permission would be obtained from the property owner either by EKPC or its agent. Construction of access roads to reach transmission support structure locations would be limited to the proposed ROW and off-road travel along the proposed transmission line route would be limited to the ROW, to the maximum extent practicable. The access roads would be 12 feet in width and would be constructed with the assistance of heavy equipment, such as a bulldozer or skidder. Erosion would be controlled along the new access roads by applying seed, lime, fertilizer and mulch to exposed soil areas. Water bars and dips would also be installed in the roads along with silt fences and staked straw bales to aid in preventing erosion. Gravel or crushed stone would be applied to road surfaces, as needed, to prevent rutting. Once construction of the proposed transmission line is completed, the new access roads would either be left open, or closed to the public by means of earthen berms or keyed gates placed at the entrance of the roads, according to the direction of the landowners involved.

3.2.2 Maintenance

Once constructed, the proposed transmission line would be aerially inspected three times a year and would be ground inspected once every four years by walking the ROW. The minimum electrical clearances maintained from the transmission line conductors to the ground underneath the conductors would be 25 feet. As previously described, during the establishment of the proposed ROW all brush and woody-stemmed vegetation would be cut to a maximum height of four inches aboveground. Upon completion of the ROW clearing and construction activities, the vegetation within the ROW would be permitted to grow for one to two years and subsequently treated with a herbicide approved for such use by the U.S. Environmental Protection Agency. The herbicides would be applied according to label directions by licensed applicators. This initial herbicide treatment would be performed using a foliar application method during the months of May through October. The foliar method of application utilizes herbicide spray that is applied directly onto the leaves of non-desirable vegetation during the growing season when the plants are in full leaf.

Following the initial herbicide treatment, the woody-stemmed vegetation occurring within the ROW would be treated with an approved herbicide every three to four years, depending on the rate of vegetation growth. Vegetation may also be cut in order to bring it back to the size where it can be effectively treated with herbicides should an area be missed during the maintenance cycle or should excessive vegetation growth take place between the maintenance cycles. Dead or living trees outside the transmission line ROW that could fall within five feet of a point underneath the outside conductor (hazard tree) would also be cut to protect the line from electrical outages caused by falling trees and branches during high wind and storm events.

4.0 PUBLIC INVOLVEMENT

Public involvement was integrated into the proposed project through a number of processes including newspaper notices, mailings, and two separate public meetings. The public meetings took the form of open houses that were held on March 15, 2005 at the L&N Depot, Bowling Green, Kentucky and May 10, 2005, Grace Baptist Church, Bowling Green, Kentucky. The purpose of the open houses was to give the members of the public living in the vicinity of the proposed project area the opportunity to learn about the proposed electric transmission project and to discuss their concerns regarding the proposed project with EKPC staff. The public was invited to the March 15th open house through notices placed in the *Bowling Green Daily News*, which were published on 3/2/05, 3/6/05, 3/9/05, and 3/13/05. The public was invited to the May 10th open house through notices placed in the *Bowling Green Daily News*, which were published on 5/1/05 and 5/8/05. The notices announced the proposed transmission project including a brief description and location of the project, as well as particulars regarding the open houses. EKPC also conducted a March 2, 2005 mailing to 126 addresses composed of property owners in the proposed project area, including public officials, inviting them to the March 15th open house, and an April 27, 2005 mailing to 160 addresses composed of property owners in the proposed project area, including public officials, inviting them to the May 10th open house. The March 15th open house was attended by 21 individuals, including public officials, representing 26 parcels of land. 41 individuals representing 26 parcels of land attended the May 10th open house, and no public officials attended. The majority of the types of verbal comments received from the public during the open house involved concerns regarding the following issues:

- access to property by construction and maintenance contractors, and possible damage to fences, fields, etc.;
- electromagnetic fields in relation to the proposed transmission line;
- relocation of existing transmission line support structures when rebuilding the existing line, such as moving structures to fence lines, moving structures further away from barns and outbuildings, etc.

No written comments were received as a result of the open house.

In addition to the open houses, newspaper notices and mailings described above, EKPC placed newspaper advertisements in the February 27 & 28, 2006 edition of the *Bowling Green Daily News*, in accordance with 36 CFR Part 800 of the *National Historic Preservation Act*, as amended, soliciting consulting parities who have a demonstrable interest in important historic and archaeological resources in the project impact area. Three respondents replied as a result of the newspaper advertisement.

5.0 NEED FOR THE PROPOSED ACTION

Warren Rural Electric Cooperative Corporation (WRECC), located in Bowling Green, Kentucky, currently receives its electric power requirements from the Tennessee Valley Authority (TVA) and its contract with TVA will expire in early 2008. In 1997 TVA offered its distributors an exit from their power supply contracts upon a required five-year notice. WRECC studied their rate situation and identified a significant disparity between TVA's Kentucky Distributors and their counterparts served by other power suppliers in Kentucky. This situation prompted WRECC to examine their power supply options and, based on the availability of economical generation services and a favorable environment relative to transmission access, WRECC gave the required five-year notice to TVA to end the power supply agreement effective April 1, 2008. WRECC issued a request for proposals to supply power and received a number of proposals, including one submitted by EKPC. Over a period of three years, WRECC researched and thoroughly evaluated the proposals on the basis of future cost, long-term security, reliability, and lasting value for their members. In early 2004 WRECC selected the EKPC proposal as the best and most cost effective plan to meet their future power supply needs, which included full membership in EKPC. By becoming a member of EKPC's system, WRECC would become a part owner of EKPC and, as such, would have a voice, and a vote, on decisions that would directly affect them in the future. Consequently, WRECC applied for membership with EKPC and was accepted as a member in May 2004 by EKPC's Board of Directors. As a result, in April 2008, when its contract with TVA expires, WRECC will join EKPC as one of EKPC's member electric distribution cooperatives and will begin having its electrical energy requirements fulfilled by EKPC.

WRECC currently is not connected to the EKPC power grid. EKPC initially investigated the possibility of connecting WRECC to its system by wheeling electric power from EKPC to WRECC through TVA's system. This means that TVA would transfer electric power through its system from EKPC to WRECC for a fee; however, TVA would not agree to provide such a service and has taken the position that it will not provide transmission wheeling to former TVA electric power distributors, such as WRECC. Therefore, EKPC determined that it must construct transmission lines that would tie WRECC into its system and transport electric power to WRECC's system. A study was subsequently conducted to determine the transmission facilities that would be needed to reliably provide electric service to WRECC beginning in 2008. The design objective of this transmission study for service to WRECC was to develop an electric transmission system that would meet the following requirements:

- provide a direct connection from the EKPC system to WRECC's system, with sufficient capacity between the two systems to allow EKPC to contractually deliver the electric power to meet WRECC's need;
- connect all of WRECC's existing 161 kV delivery points (East Bowling Green/General Motors (GM), Memphis Junction, and Aberdeen);
- connect the new WRECC 161 kV delivery point at Magna to the existing 161 kV delivery points; and
- provide an adequate and reliable transmission system that does not result in system problems for either EKPC or neighboring electric transmission systems for normal and/or single-contingency conditions.

In past years, TVA offered for sale, and WRECC purchased portions of the local transmission delivery system at 69kV and 161kV. The WRECC system is configured for the delivery of wholesale power, and currently receives wholesale power from TVA, at three primary delivery points. These three delivery points are WRECC's existing East Bowling Green, Memphis Junction, and Aberdeen Substation. Voltage levels at these locations are transformed from 161kV to 69kV. Because transmission connections must be made between the EKPC system and the WRECC system to provide service, these existing critical delivery points are the most reasonable connection locations for the proposed plan. If they were not used by EKPC, new delivery points requiring the construction of new substations to step down voltage and new transmission paths would be required. Because the WRECC system infrastructure already exists, the end points of the line construction are essentially pre-determined. To construct new delivery facilities, as compared to utilizing the existing ones, would be considerably more costly and would create unnecessary impact to the people and resources of the area.

There are 4 projects that EKPC proposes to construct to provide service to WRECC and which will be covered in four separate EAs. The work will involve rebuilding of existing lines, paralleling existing lines, and/or construction on entirely new rights-of-way. The preferred order for construction of the proposed transmission line projects is as follows:

1st - GM – Memphis Junction (GM)
2nd - Memphis Junction – Aberdeen (MJA)
3rd - Barren County – Oakland – Magna (BOM)
4th - Wilson – Aberdeen (WA)

EKPC believes it is prudent to construct the GM – Memphis Junction project (the proposed action) first for the following reasons:

1) Co-Location – EKPC's proposed alternative for this project would involve rebuilding approximately 8.56 miles or 56.28% of the proposed project. EKPC also proposes to parallel an additional 2.41 miles (~ 15.84%) of line. Some of the rebuild sections for this project occur in heavily developed areas. Also, rebuilding existing facilities is typically more complicated to construct than construction of lines on new right-of-way for three primary reasons:

    - Teardown of existing facilities. The material that currently exists on site must be removed and properly disposed.

    - Existing residences and structures. Frequently there are houses/buildings/outbuildings that have been built adjacent to the existing easement since the initial construction of the line.

    - Threats to reliability are created when the existing facilities are taken out of service. The existing facilities are needed and when removed from service WRECC must rely on backfeeds and procedures that are normally used for contingencies (unexpected problems in the system fallen (tree, transformer failure, etc)). Because contingencies can still happened during the time of construction, the removal of the existing lines must be coordinated and their outage time minimized to avoid unacceptable levels of reliability.

2) Reliability – Construction of GM – Memphis Junction first provides the needed backfeeds (voltage source from a secondary system) into the East Bowling Green/GM and Memphis Junction Substations. Once constructed, this line will allow continued, uninterrupted service to the residents of Bowling Green and the surrounding communities while other projects are constructed.

3) Right-of-way acquisition – Far fewer new easements must be acquired for the section of the project that is being rebuilt. Typically the existing easement can be amended and restated to include the current project, and the process is less time consuming.

GM - Memphis Junction

	Length	*Percent*
Rebuild	8.56	56.28%
Parallel/Co-locate	2.41	15.84%
New Construction	4.24	27.88%
Total	15.21	100.00%

6.0 ALTERNATIVES

A number of alternatives were investigated by EKPC for the proposed electric transmission line project including *no action*, electrical alternatives including wheeling electric power to WRECC through the TVA system, and alternate routes. Based upon all the alternatives that were investigated, EKPC determined that the transmission project, as proposed, offered the most viable option for providing electric power to WRECC.

Energy conservation was not considered by EKPC as an alternative to the proposed transmission project because energy conservation would not provide a tie between EKPC's and WRECC's systems, which EKPC could use to provide electric power to WRECC.

6.1 NO ACTION

Choosing the *no action* alternative would involve maintaining the status quo and not constructing the project, as proposed. Should the proposed electric transmission line not be constructed, EKPC would not be able to fulfill WRECC's request for electric service and provide electric power to WRECC's distribution system (See Section *5.0 NEED FOR THE PROPOSED ACTION*). As a result, WRECC would not be able to secure lower cost wholesale power at a more competitive rate than from its current power supplier and would not be able to pass this cost savings onto its electric consumers. This is a situation that would be unacceptable to EKPC and WRECC, the Boards of Directors of these two electric cooperatives, and WRECC's member electric consumers. Therefore, EKPC determined that the *no action* alternative was not a viable alternative to the proposed action.

6.2 ELECTRICAL ALTERNATIVES

EKPC investigated a number of electrical alternatives to the proposed project including:

69 kV Facilities

EKPC considered the extension at 69 kV from EKPC's western most substation, closest to WRECC's system. However, this alternative was determined not to be feasible because it was determined not to have enough capacity due to WRECC's electrical demand, which is estimated to be approximately 400 megawatts in 2008.

345 kV Facilities

EKPC also considered constructing 345 kV facilities to WRECC's system as an alternative to the proposed project. However, this alternative was eliminated as being an option because EKPC determined that constructing 345 kV facilities would cost approximately twice as much as the proposed project to construct. At least 23 miles of 345 kV transmission line construction would be required with this alternative to connect the northern portion of WRECC's system to the nearest 345 kV facilities. An additional 29 miles of 161 kV transmission line construction would then be needed between the northern and central portions of WRECC's system.

Other 161 kV Facilities

Another alternative to the proposed project considered by EKPC was the construction of a 161 kV transmission line from GM to Aberdeen with a 161 kV tap line to Memphis junction. However, the reliability of this system was determined to be unacceptable, since a single fault anywhere on this three terminal line would eliminate EKPC's 161 kV connection to Memphis Junction.

Wheeling of Electric Power

EKPC also investigated the possibility of wheeling of electric power from EKPC to WRECC through TVA's system. As part of this alternative TVA would have transferred electric power through its system from EKPC to WRECC for a fee, however, TVA would not agree to providing such a service and this alternative was eliminated from consideration.

Triple Circuit

For the proposed GM – Memphis Junction project a connection had to be made between the existing GM and Memphis Junction Substations for reasons of reliability and independence of the system. A triple circuit system between the Memphis Junction Substation and the rebuild portion of this project was considered for this project but was dismissed for two reasons: 1) Failure of a structure in a triple circuit system is unacceptable from a reliability standpoint for this section of line; and 2) the single circuit from GM – Memphis Junction can be operated independently.

The electrical alternatives that were investigated by EKPC are documented in detail in a report entitled *STUDY TO PROVIDE TRANSMISSION SERVICE TO WARREN RURAL ELECTRIC COOPERATIVE* that was prepared for EKPC by Commonwealth Associates, Inc.

This report can be referred to online for further information at the USDA Rural Development's website: http://usda.gov/rus/water/ees/ea.htm.

6.3 ALTERNATE ROUTES

Since the electrical objectives of the proposed project include the need for a direct transmission connection at key substations in the WRECC system, the physical alternatives were limited to the areas and distances between the East Bowling Green (GM) and Memphis Junction Substations (See Section *5.0 NEED FOR THE PROPOSED ACTION*). An assessment was made to determine how siting should be accomplished. The first consideration made was to explore opportunities for the use of existing ROWs, or replacement (rebuild) of existing lines. EKPC screened existing facilities in the project area to determine if they were good candidates for co-location/rebuild. The criteria used were as follows:

1) the critical function of the line and whether it could be removed from service for the construction time needed;
2) the amount of development or encroachment near the existing ROW easement;
3) the congestion or density of development in the surrounding areas;
4) the physical condition of the existing electric line; and
5) the need or lack thereof for an expanded ROW easement.

Based on this first review, some of the line segments were immediately chosen for co-location/rebuild. The first selections for co-location/rebuild were through the Bowling Green community. Since it was determined that these sections could be rebuilt/co-located, it was reasonable to conclude that there was no need to develop additional alternate routes for these sections. The remainder of the project was included in a more analytical comparison and siting effort.

For GM – Memphis Junction, existing electric transmission lines were evaluated and determined to be available for rebuilding for approximately 8.56 miles of the proposed route.

This 8.56 miles of line rebuild would occur in two separate sections, a 3.39-mile section and 5.17-mile section (See PROJECT REFERENCE MAPS, Appendix A). Another 2.41-mile section of the proposed route parallels existing transmission lines between the sections of the route containing lines that would be rebuilt. Alternate routes, or alignments, were not investigated for the portion of the proposed route that extends to the north around Bowling Green in a general east-west orientation (See Maps 1 of 3 & 2 of 3, Appendix A) because this portion of the route follows existing electric transmission line ROWs by either being located within the existing ROWs (co-location/rebuild), or paralleling immediately adjacent to the existing ROWs.

The remainder of the proposed route would involve a proposed new line segment that would not entail co-location/rebuild or paralleling existing electric facilities, but would parallel another proposed route developed for EKPC by Photo Science using the EPRI Overhead Electric Transmission Line Siting Methodology. Factors such as the built environment (proposed and existing development), the natural environment, and engineering concerns were used to develop alternate routes. All routes were analyzed using the following issues in order to choose the least disruptive route available.

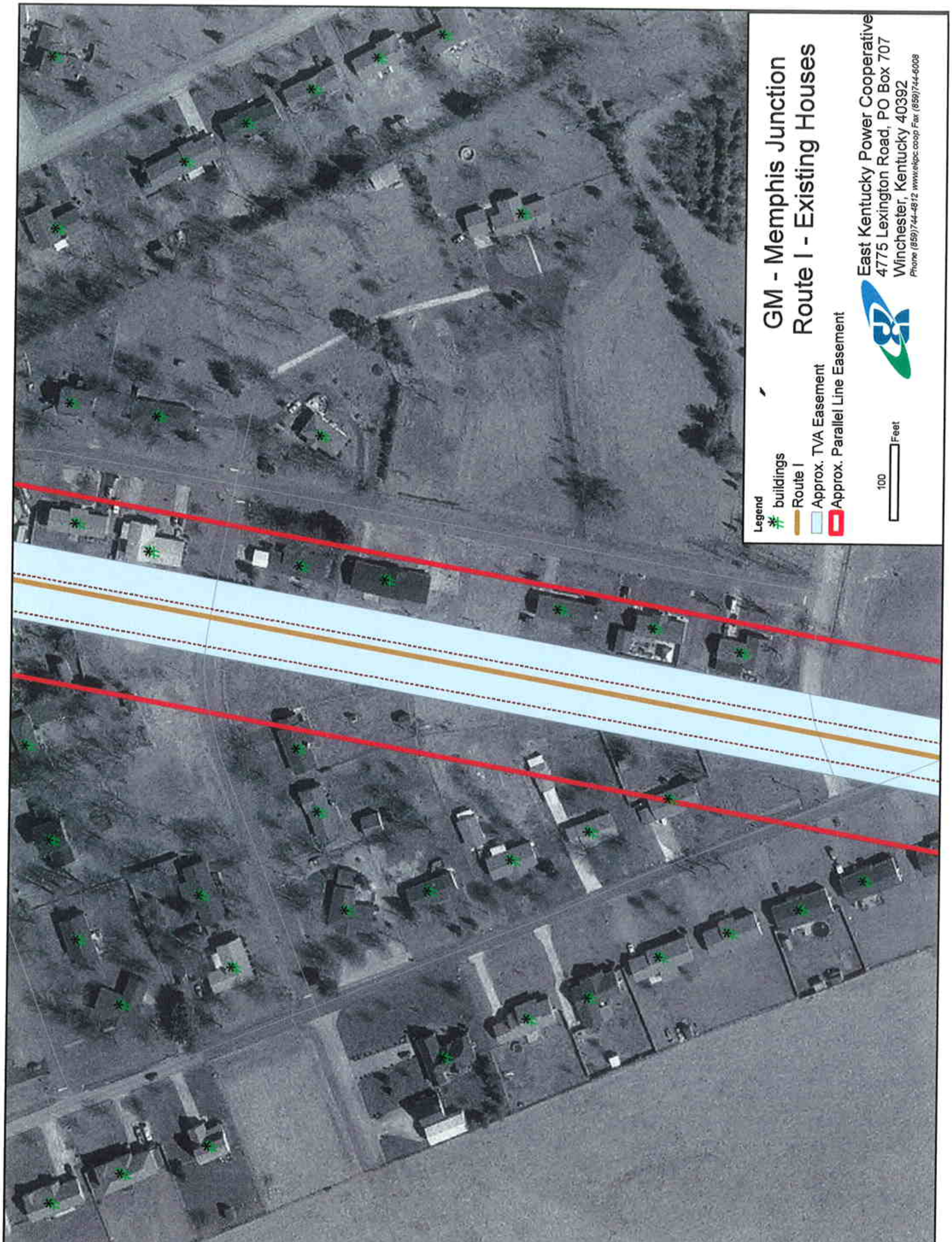
- Visual Issues
  - ✓ Number of people in the general public that would view the line on a daily basis.
- Community Issues
  - ✓ Number of people affected, directly or indirectly.
  - ✓ Proximity of residences to proposed line.
- Schedule/Delay Risk:
  - ✓ Number of parcels/property owners.
  - ✓ Number of new easements required.
- Proximity to existing roads.
  - ✓ Proximity to existing transmission corridors.

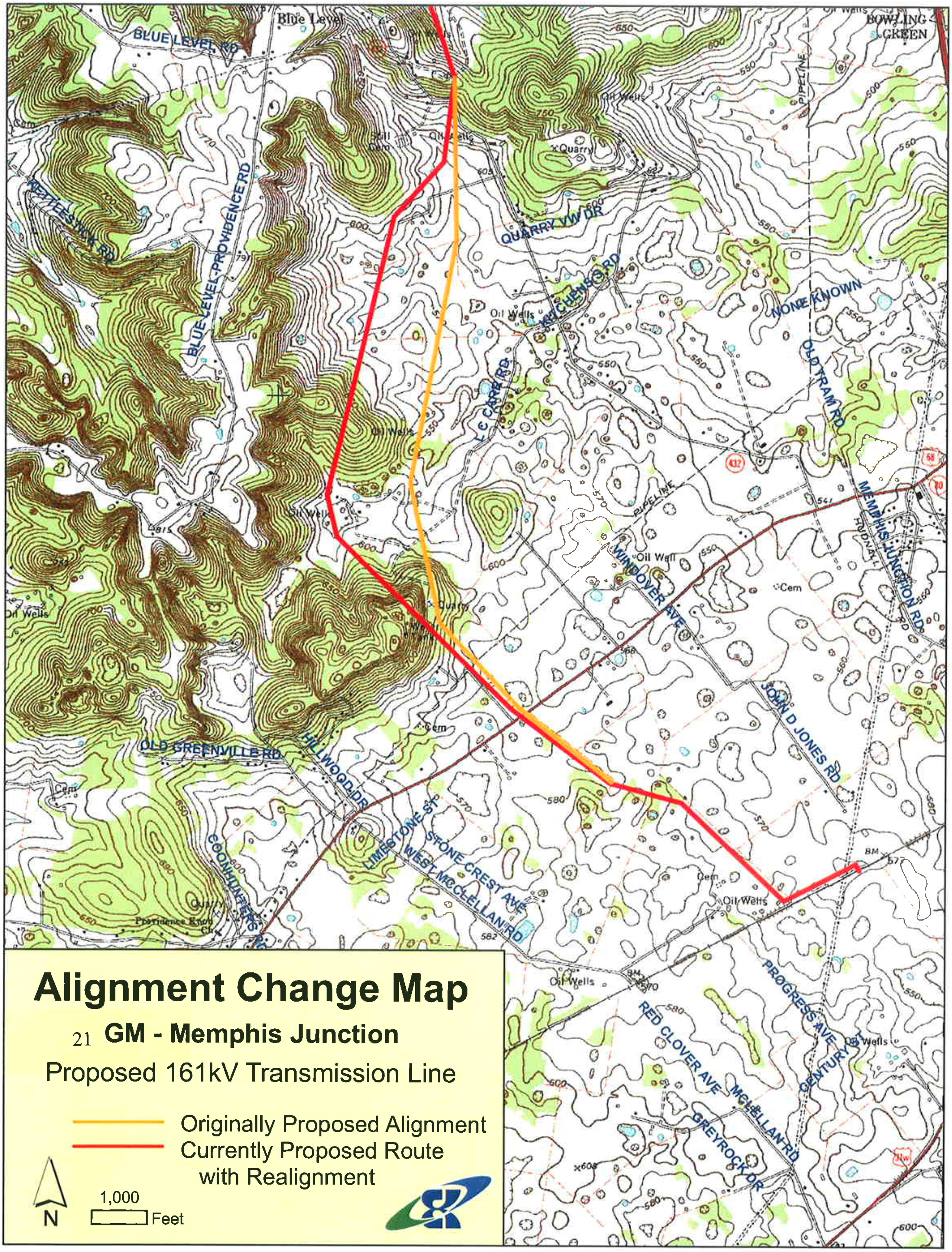
- Special Permit Issues
  - ✓ Number of physical constraints needing special permits to construct the line over. Such as, river crossings, major highway crossings, railroad crossings, public land crossings, etc…

A number of alternate routes were investigated for the proposed new line segment that does not follow existing electric utility line ROWs and extends in a north-south orientation in the southwestern portion of the proposed project area (See Map 3 of 3, Appendix A). All of these alternate routes were located slightly further to the east than the proposed route, closer to Bowling Green. The eastern most alternate route that was investigated scored low impacts on construction/maintenance accessibility issues, medium impacts on visual and schedule delay issues, and high impacts on community issues. This alternate route is located on TVA easements and it would have been necessary to locate the proposed new line off the existing easement (parallel) in a very congested area. If EKPC attempted to parallel the existing line on either side of this route, it would have required exiting residences to be removed (See Route I – Existing Houses Figure, page 20). Therefore, paralleling the existing TVA line was removed from consideration.

Two other alternate routes investigated were located a few thousand feet further east than the proposed route, and both cross U.S. Highway 68 at a location of proposed and ongoing development, which would increase the number of parcels of land affected. Both of these alternate route scored medium impacts on visual, community, schedule delay, and construction/maintenance accessibility issues; however, they were eliminated from consideration due their impact on the proposed and ongoing development.

Beside the alternate routes outlined above, the mid portion of the proposed route for the new line segment was realigned. This portion of the proposed route was originally located approximately 1,000 to 1,300 feet further to the east than the currently proposed


GM - Memphis Junction
Route I - Existing Houses
Legend
buildings
Route I
Approx. TVA Easement
Approx. Parallel Line Easement
100
Feet
East Kentucky Power Cooperative
4775 Lexington Road, PO Box 707
Winchester, Kentucky 40392
Phone (859)744-4812 www.ekpc.coop Fax (859)744-6008


Alignment Change Map
21 GM - Memphis Junction
Proposed 161kV Transmission Line
Originally Proposed Alignment
Currently Proposed Route
with Realignment
N
1,000
Feet
BLUE LEVEL RD
Blue Level
BOWLING GREEN
KETTLESTICK RD
BLUE LEVEL-PROVIDENCE RD
QUARRY VW DR
HITCHENS RD
NONE KNOWN
OLD TRAM RD
L C CARR RD
MEMPHIS JUNCTION RD
WINDOVER AVE
JOHN D JONES RD
OLD GREENVILLE RD
HILLWOOD DR
LIMESTONE ST
STONE CREST AVE
WEST MCCLELLAN RD
COONHUNTERS RD
PROGRESS AVE
CENTURY ST
RED CLOVER AVE
MCCLELLAN RD
GREYROCK DR
PIPELINE
Oil Wells
Quarry
Cem

route; however, due to suggestions and negotiations with property owners in the area, the line was moved to its currently proposed location (See Alignment Change Map, page 21).

For a more detailed discussion of the alternate routes developed for the proposed electric transmission project refer to *The EPRI Overhead Electric Transmission Line Siting Methodology Results for East Kentucky Power Cooperative's Memphis Junction – Natcher Parkway Junction 161 kV Transmission Line, Barren – Oakland – Magna 161 kV Transmission Line, and Wilson – Aberdeen – Morgantown 161 kV Transmission Line Projects* in Appendix D of this document.

7.0 EXISTING ENVIRONMENT

The proposed project area lies in the Mississippian Plateaus region in south-central Kentucky, and is characterized by gently rolling hills, sinkholes and isolated knobs. The topography along the eastern and central portions of the proposed transmission line route is composed of very gently rolling hills, while the westernmost portion of the route extends through more steeply sloping hills and valleys.

The majority of the portion of the proposed route for the GM to Memphis Junction Transmission Line that extends in a general east-west orientation, east, north and west of the municipality of Bowling Green, Kentucky, is located within dedicated ROWs for existing electric utility line ROWs, with approximately one quarter of this portion of the route paralleling, immediately adjacent to, existing electric utility line ROWs. The eastern and northern portions of the proposed route extend through urban and urbanizing areas associated with Bowling Green, while the majority of the southern and western portions of the proposed route extend through agricultural land used mostly for row crops, such as corn and soybeans, intermixed with rural residential development. The proposed transmission line route also traverses approximately 2.1 miles of forested areas consisting of small patches of woods on ridge tops or along the Barren River and its tributaries. The upland forested areas are typically composed of second and third-growth oak-hickory forests, and the riparian zones contain species commonly present in bottomland hardwood forests, such as sycamore *(Platanus accidentalis)*, box elder *(Acer negundo)*, hackberry *(Celtis occidentalis)*, and silver maple *(Acer saccharinum)*.

The proposed transmission line route crosses the Barren River three times, as well as Jennings Creek three times. The proposed route also crosses a few intermittent tributaries of Jennings Creek. The Barren River is recognized by the U.S. Army Corps of Engineers as being navigable in the proposed project area. However, none of the watercourses in the area are designated as being Outstanding Resource Waters, Cold Water Aquatic Habitats, National, or Wild and Scenic Rivers, or special water resources (exceptional waters).

Common wildlife species in the project area include white-tailed deer, wild turkey, gray squirrel, cardinals, Carolina wrens and robins. Threatened and endangered species that could potentially occur within the project impact area include the Indiana bat *(Myotis sodalis)*, the gray bat *(Myotis grisescens)*, Price's potato-bean *(Apios priceana)*, and a number of species of mussels.

A review of the *National Wetland Inventory Maps (NWI Maps)* for the proposed project area revealed that the easternmost crossing of the Barren River by the proposed transmission line route is recognized as a riverine unconsolidated bottom wetland and the two crossings of the Barren River are recognized as lacustrine limnetic unconsolidated wetlands. The review of the *NWI Maps* also revealed that the Jennings Creek crossings are recognized as riverine unconsolidated bottom wetlands and that the proposed route crosses two small isolated palustrine unconsolidated wetlands, one on the eastern end of the proposed route and one on the western end.

A review of *Flood Insurance Rate Maps* (Community Panel Numbers 21227C 0084 D, 21227C 0094 D, 21227C 0100 D, 21227C 0105 D, & 21227C 0160 D) revealed *Special Flood Hazard Areas* that are associated with the Barren River and Jennings Creek, and are inundated by a 100-year flood. The floodplains extend all along the river and creek through the project area, and the portion of the proposed route in which the proposed new line would parallel existing transmission line, north and northwest of Bowling Green, is located almost entirely within the floodplains of the Barren River and Jennings Creek. The proposed rebuild section on the eastern end of the proposed route also extends into the floodplain associated with the Barren River, and the eastern end of the western rebuild portion of the proposed route also extends into the floodplain of Jennings Creek

The U.S. Natural Resource Conservation Service (NRCS) was contacted regarding the proposed electric transmission project pertaining to prime and statewide important farmland soils. Based on this contact the NRCS reviewed the *Soil Survey of Warren County, Kentucky* in connection with the proposed project area and responded that approximately 25 to 30 percent of the proposed new ROW that would not parallel an existing transmission line is composed of prime and important farmland soils, approximately 40 to 45 percent of the proposed new ROW that would parallel an existing transmission line is composed of prime and important farmland soils, and the proposed rebuild portions of the proposed project would not affect these types of soils.

The Kentucky Heritage Council, State Historic Preservation Office (SHPO) was contacted regarding important cultural (historic and archaeological) resources in relation to the proposed electric transmission project. The SHPO reviewed the proposed project in relation to the proposed project area and its files of known historic resources, and requested a cultural historic reconnaissance survey of the project area and a reevaluation of five previously identified sites in the area of potential effect. EKPC had the requested survey performed. Based on information supplied by the SHPO, along with the survey results, the survey report concluded there are no known historic properties or sites that are listed or proposed for listing in the *National Register of Historic Places* located in the project impact area. The survey report also concluded that there is one known historic site (aboveground resource) in the project area that appears to be eligible for listing, the Gladdish-Asher property located on the southern side of U.S. highway 68; and one industrial archaeological resource potentially eligible for listing comprised of a large quarry located on the Perkins property on the northern side of U.S. Highway 68 (See Cultural Resource Survey, Appendix D, for more detailed information).

No developed recreational facilities, such as campgrounds or recognized hiking trails, are located in the vicinity of the proposed route for the electric transmission line. However, incidental recreational activities, such as hiking and hunting, could take place within the project area.

Other Planned or Occurring Projects

There are several other past, present, and reasonably foreseeable actions occurring, or planned in the general project vicinity that may be relevant in the assessment of the potential cumulative effects of the proposed project, *i.e.*, the incremental effects of the proposed project taking into account other past, present, and reasonably foreseeable actions in the area. As described in Section *5.0 NEED FOR THE PROPOSED PROJECT*, those actions include three other transmission line projects proposed by EKPC as part of the overall transmission system improvements needed to connect the WRECC transmission and distribution system with the EKPC generation and transmission system. Those segments, each of which is an independent action that will be subject to preparation of an Environmental Assessment, include: 1) the Barren-Oakland-Magna project (approximately 28.4 miles in length); 2) the Memphis Junction-Aberdeen project (approximately 27.57 miles in length); and 3) the Aberdeen-Wilson project (approximately 26.8 miles in length). Each of these proposed transmission line projects would include a combination of relocation/rebuild of existing transmission lines on existing ROW with construction of new transmission lines along new ROW. None of these proposed projects has been completed, but the effects of each project are expected to be generally comparable to the effects of the GM-Memphis Junction Transmission Line as described in this report.

Other existing and planned actions in the general proposed project vicinity include the Kentucky Transpark, a proposed 1,200-acre commercial and industrial park just north of Bowling Green. Currently, the Bowling Green Metalforming (Magna) facility is the only major tenant in the Transpark, but additional commercial and industrial development is anticipated over the next decade. Other ongoing commercial and industrial development in the area includes the Scotty's Industrial Park, and various other residential, educational, and commercial developments have occurred or are planned, in the general vicinity. Finally, the Kentucky Transportation Cabinet is evaluating the possible construction of a new highway connector between Interstate 65 and U.S. 31W in the general vicinity of the General Motors and Magna manufacturing facilities to serve increased traffic demand associated with the ongoing commercial and industrial growth.

8.0 ENVIRONMENTAL CONSEQUENCES

8.1 AIR QUALITY

Exhaust from the engines of the machinery used to construct the proposed electric transmission line may increase emissions in the proposed project area on a short-term basis. However, the components of exhaust are volatile and would probably move out of the immediate project area within a short period of time. Additionally, it is doubtful that the exhaust from such machinery would significantly contribute to the overall concentrations of ozone, nitrogen oxides, aldehydes or other noxious substances.

The dust associated with the proposed construction activity could have a small potential for affecting the air quality of the immediate project impact area. This source of air quality degradation, however, would not be anticipated to have any significant effect on the area. Any dust associated with construction activities would be short-term, lasting only through the construction phase of the project. Additionally, vegetation would be cut from the proposed ROW and the areas denuded of vegetation would be very small. As a result, the amount of air quality degradation associated with fugitive dust would be negligible and once construction is completed there would be a return to ambient air quality conditions in the immediate vicinity of the project impact area. No dust would be associated with the maintenance of the proposed project once the construction activities are completed. The ROW would be maintained by a foliar method of herbicide application possibly combined with some vegetation cutting, which would not produce any dust.

The herbicides proposed for use would not have any affect on the air quality of the project area. The applicators would be trained and licensed for the application of herbicides, and herbicide label directions would be strictly followed. Herbicide applications would also be made in accordance with the requirements of the Kentucky Division of Pesticides, and applicators would monitor weather conditions and would postpone or suspend applications when conditions become unfavorable as outlined below:

Application Method	**Temperatures Higher Than (°F)**	**Humidity Less Than (%)**	**Wind (at Target) Greater Than (MPH)**
Hand (cut surface)	n/a	n/a	n/a
Hand (other)	98	20	15
Mechanical (ground)	95	30	10
Aerial	95	30	5

The proposed electric transmission project would not be expected to have any significant cumulative effects on air quality. As outlined above, the direct and indirect air quality impacts of the proposed would be expected to be minimal, and mitigation measures incorporated in the proposed action would further reduce any potential air quality effects. Thus, the proposed action would not be expected to contribute to any significant incremental effects on air quality in light of other actions occurring in the project vicinity.

8.2 WATER QUALITY

The proposed construction activity associated with the proposed electric transmission project would not have any direct effects on rivers and streams. The proposed transmission line would span all of the watercourses involved, with no support poles placed within the channels, and none of the construction equipment or vehicles would be permitted to ford the Barren River or any of the creeks or streams in the project area.

The proposed project could have a small potential for water quality degradation of the river and streams due to the erosion of soils in association with water runoff on the construction sites. The mechanical cutting methods of ROW clearing associated with the proposed project could also potentially increase nutrients, storm flows, and sediment loads of the streams within the project area. Generally, the amount of increase depends on the degree of disturbance, the topography of the area, and the type of soil involved. The manual cutting methods of the transmission line construction would not substantially increase storm flow volumes and peaks because plant water use would be minimally affected. The manual methods would not increase nutrients or sediment loads of the streams in the project area because litter and duff would be left intact.

To aid in protecting the water resources of the project area from sedimentation, EKPC would be employing accepted erosion control practices, which would incorporate *Best Management Practices* (BMPs) to prevent nonpoint source pollution and control stormwater runoff and sediment damage to water quality. These erosion control practices would include the utilization of silt barriers, such as siltation fences and/or straw bales around any disturbed areas in the vicinity of the streams to filter runoff water. To aid in protecting the water quality of the project area, EKPC also would not initiate required land-clearing activities until absolutely necessary to reduce the amount of time bare soils are exposed to wind and water erosion. Additionally, areas of soil disturbed by the proposed construction activity would be temporary, lasting only through the construction stage of the project, and all disturbed areas would be stabilized and revegetated, as soon as practicable, once construction is completed. The proposed project could further cause water quality degradation if vegetation cut from the proposed ROW during the construction phase of the project falls into the river or stream channels. To mitigate this potential form of degradation, any vegetation falling into watercourses during construction would be removed and pulled back from the channels.

The proposed project could have a potential of affecting water quality within the project area from the herbicides used on the proposed ROW entering surface water during maintenance operations associated with the proposed transmission line ROW. However, herbicide applications would be made in accordance with label directions and the Kentucky Division of Pesticides to guard against the contamination of water resources within the proposed project area. Herbicides could enter rivers and creeks during treatment by direct application or drift, or within water runoff after treatment. The risk of herbicides entering surface water by direct application would be low because applicators would monitor weather conditions to aid in protecting water quality and would postpone or suspend application operations when weather conditions become unfavorable as outlined in Section *8.1 AIR QUALITY*. Applicators would also postpone herbicide applications during occurrences of precipitation or when precipitation is predicted to protect against herbicides affecting water resources of the area through rainwater runoff. EKPC's policy prohibits herbicide applications during periods of rain or when the threat of rainfall is imminent.

In addition to surface water, groundwater could be affected by herbicide applications through the vertical seepage of herbicides into aquifers. However, the use of vegetation buffer strips is recognized as an effective mechanism to aid in guarding against herbicides within rainwater runoff from affecting water quality. Consequently, EKPC would utilize the following buffer strips, or zones, to further aid in protecting the quality of the water resources within the proposed project area:

- no herbicide would be applied within 30 horizontal feet of lakes, ponds, wetlands, perennial or intermittent springs, seeps, or streams;
- no herbicide would be applied within 100 horizontal feet of any public or domestic water source; and
- herbicide mixing, loading, or cleaning areas would not be located within 200 feet of any open water, or public or domestic water source.

Through the implementation of these mitigation requirements the risk to water contamination would be minimal because the buffers would reduce herbicide concentrations through mixing and dilution.

Significant cumulative effects on the water resources of the area caused by the proposed electric transmission project would not be expected given the mitigation measures that would be implemented. The sediment load of the surface water caused by the proposed project would be negligible to nonexistent, given the mitigation measures described above, and the herbicides would not leach into the groundwater or run off into surrounding surface waters in significant amounts. Additionally, the proposed use of herbicides to aid in managing vegetation within the ROW for the proposed electric transmission line would involve infrequent herbicide applications in relatively small quantities, and as a result of the incorporation of the above-described mitigation measures, the use of herbicides to maintain the proposed electric line ROW would not have any significant incremental effects on the water resources of the project area.

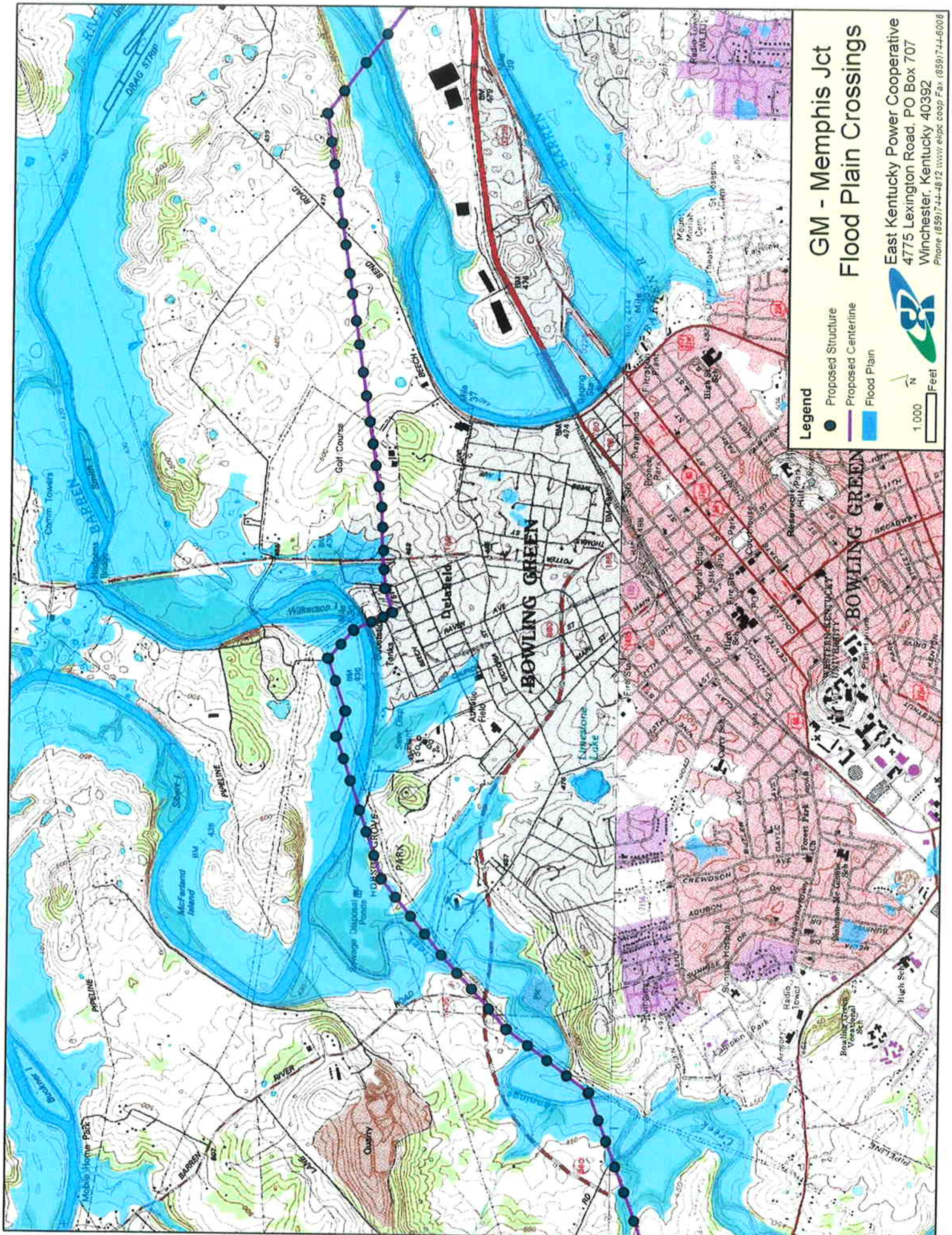
8.3 WETLANDS

As described in Section *7.0 EXISTING ENVIRONMENT*, the proposed route for the electric transmission line traverses wetland areas associated with the Barren River and Jennings Creek, as well as a couple of very small isolated wetlands. There are no practicable alternatives to crossing these wetland areas should the proposed transmission line be constructed. The wetlands areas associated with the Barren River and Jennings Creek that would be traversed, and the isolated wetland on the eastern portion of the proposed route, would either be crossed on existing electric utility line ROW or parallel to existing ROW. Moving the alignment of the proposed new transmission line off the existing ROW would have more of an effect on the existing land use in the project area and would add to construction costs, as compared to the proposed alignment, due to the new ROW that would be required. Moving the proposed alignment off, or away from, the existing ROWs would also have more of an effect on the existing land use in the project area due to the further transection of parcels of land in the area. In addition, there are no practicable alternatives to crossing the small isolated wetland along the western portion of the proposed alignment because of existing development and other small isolated wetlands in the area. However, the proposed transmission line would not have any direct effects on the wetland areas in question because the transmission line would be able to span the wetlands and would not result in the placement of support structures in these areas. The proposed transmission line would also not have any indirect effects on the wetlands because EKPC would be implementing *Best Management Practices* to protect the wetlands from sedimentation combined with other mitigation measures to prevent the herbicides from leaching into the wetlands (See Section *8.2 WATER QUALITY).* Additionally, no construction equipment or vehicles would be permitted within the wetland areas.

Significant cumulative effects on the identified wetland areas caused by the proposed electric transmission line project would not be expected. Sediment load of the wetlands, if any, would be negligible given the mitigation measures that would be implemented, and the herbicides would not be expected to combine with rainwater run off in significant amounts and reach the wetland areas.

8.4 FLOODPLAINS

The proposed route for the planned new electric transmission line traverses floodplain areas associated with the Barren River and Jennings Creek (See Section *7.0 EXISTING*


GM - Memphis Jct
Flood Plain Crossings
East Kentucky Power Cooperative
4775 Lexington Road, PO Box 707
Winchester, Kentucky 40392
Legend
Proposed Structure
Proposed Centerline
Flood Plain
1,000
Feet
BOWLING GREEN
WESTERN KENTUCKY UNIVERSITY

ENVIRONMENT). There are no practicable alternatives to crossing these floodplains should the proposed transmission line be constructed because the floodplain areas in question would be crossed on either existing electric utility line ROWs or adjacent to such ROWs. Moving the alignment of the proposed new transmission line off the existing ROW in an attempt to avoid the floodplain areas would add to construction costs and would have more of an effect on the existing land use in the project area, as compared to the proposed alignment, due to the new ROW that would be required. Moving the proposed transmission line alignment off, or away from, the existing ROW would also have more of an effect on the existing land use in the project area due to the further transection of parcels of land in the area. Due to the width of the floodplain areas identified and the alignment of the proposed route in relation to the floodplain areas, the placement of support structures within these floodplains would be unavoidable (See Floodplain Crossings Map, page 33). The proposed support structures, however, would be pole type structures that would have very little, if any, effect on flood flows or levels. Consequently, cumulative effects from the placement of the proposed electric transmission line within the floodplain areas would not be expected.

8.5 SOILS

During the construction of the proposed electric transmission line the soils within the proposed ROW could be affected by vehicles being driven on the ROW causing compaction and erosion of soils. The weight of the vehicles and associated machinery on the ground causes compaction of the soil. Soil compaction increases bulk density and decreases aeration porosity. This affects the soil's ability to store and supply air, water and nutrients. Soil compaction on the proposed ROW would be minimal. To aid in mitigating soil compaction off-road travel of construction vehicles would be kept to a minimum. However, areas affected by construction access roads and areas of sustained gentle slopes along the proposed ROW would experience soil compaction due to the use of construction equipment.

The construction of the proposed new transmission line is not expected to have any significant effect on the soils of the project area. The majority of the proposed project would entail the rebuilding of an existing electric utility line with adequate electrical clearances between the vegetation and the existing electrical conductors. Consequently, minimal tree and vegetation removal would be required along this section of the proposed route to maintain electrical clearances. Along the new sections of the proposed transmission line, vegetation within the ROW would be cut to achieve electrical clearances, leaving roots intact to aid in holding soils in place. Soils would be exposed to wind and water erosion at support structure locations within the proposed ROW to allow for the installation of the support structures, which represents a very small amount of the land within the transmission line ROW. Soils would also be exposed at construction access road locations along the proposed ROW.

As outlined in Section *8.2 WATER QUALITY,* EKPC would be implementing soil erosion practices during the construction phase of the project to guard against soils from leaving the construction sites, and disturbed areas would be stabilized and revegetated, as soon as practicable, once construction activities are completed. Soil erosion on the proposed transmission line ROW during maintenance cycles would not be a problem because mechanical equipment may not be used to perform maintenance procedures, and if such equipment is used it normally only involves one or two passes to perform maintenance procedures, which would not create an erosion problem.

As outlined above, no major erosion problems would be anticipated from the construction and maintenance of the proposed project; therefore, the proposed electric transmission project would not have any significant cumulative effects to the soils located on the proposed ROW.

8.5.1 Prime and Important Farmland Soils

The proposed route for the planned new electric transmission line traverses soils that are recognized as prime and statewide important farmland soils (See Section *7.0 EXISTING ENVIRONMENT*). There would be no practicable alternatives to traversing prime and important farmland soils in the project area should the electric transmission line be constructed because these types of soils are scattered throughout the area and would be unavoidable by the electric transmission line route. The effect of constructing the proposed transmission line on the prime and important farmland soils would be minimal. The majority of the proposed route for the new line would involve the rebuilding of an existing electric utility line on existing ROWs that, according to the U.S. Natural Resource Conservation Service (NRCS), *"would not affect prime or important farmland"* (See NRCS letter from Mr. Don McCallon to Mr. Gary W. Gilpin, GILPIN GROUP, September 13, 2005, and GILPIN GROUP letter from Mr. Gary W. Gilpin to Mr. Donald McCallon, NRCS, May 17, 2006, Appendix C). Additionally, EKPC has a policy of allowing agricultural practices within its ROWs as long as they do not interfere with, or jeopardize, the operation of its lines. Therefore, farmland soils would only be permanently lost to agricultural practices in the immediate vicinity of the transmission line support pole locations within the proposed ROW, which represents a very small amount of the total ROW. As a result, the proposed electric transmission project would not be expected to have any significant cumulative effect on prime or statewide important farmland soils located in the project area.

8.6 LAND USE & RECREATION

The proposed electric transmission line would not be expected to have any significant effect on the existing land use in the project area. The majority of the proposed line would involve the rebuild of existing electric utility lines on existing ROWs and the existing land use along these sections of the proposed transmission line route would remain unchanged. The land use along the agricultural portions of the proposed new line sections would also essentially remain unchanged because EKPC has a policy of allowing agricultural practices within its ROWs, as long as such practices do not interfere with, or jeopardize the operation of its lines. The majority of the proposed route extends through rural areas and was routed in negotiations with the landowners involved and in an attempt to avoid concentrated residential development. Some of the proposed rebuild portions of the route pass within close proximity to residential development in the vicinity of Bowling Green; however, the land use within these portions of the proposed route would remain unchanged and no significant effect on the residential development would be expected. As a result, the proposed transmission route would have minimal impacts on existing residential development in the project area.

Approximately 17 percent of the proposed route for the transmission line, or roughly 31.3 acres, would require clearing, approximately 25.5 acres of which is composed of wooded areas and would result in a change in the existing land use. However, this amount of clearing is relatively small in relation to the total project and would not constitute a significant change in land use given the large amount of wooded areas in the region. In addition, approximately 2.41 miles of the proposed route parallels an existing electric transmission line, which would aid in mitigating potential effects that the proposed new line would have on the existing land use within this area.

As described in Section *7.0 EXISTING ENVIRONMENT,* no developed recreational facilities, such as, campgrounds or picnic areas, exist within the project impact area and, as a result, these types of areas would not be affected by the proposed electric transmission project. Incidental hiking, and deer and small game hunting activities could occur within the project area and could be affected by the proposed project. However, such activities would take place on a case-by-case basis and any effect to these types of activities by the proposed project would be minimal, if at all.

As described above, the proposed electric transmission line project would have minimal effects on the existing land use and incidental recreational activities that may occur within the project area. As a result, no significant cumulative impacts would be expected by the proposed project.

8.7 VEGETATION

The proposed electric transmission line project would involve the cutting of trees along the proposed electric transmission line ROW to provide adequate electrical clearances for the proposed transmission line. Within the proposed ROW there are approximately 31.3 acres of land that would require clearing to achieve electric clearances for the proposed transmission line. Vegetation along the proposed ROW in the immediate vicinity of the transmission line support structures would be removed to allow for placement of the support structures. This would involve a very small amount of land of less than 0.005 acre at each structure location.

The herbicides being proposed to manage vegetation during the maintenance of the transmission line ROW would by design kill or injure any plants coming into contact with the chemicals. EKPC is proposing the use of herbicides to control targeted woody-stemmed vegetation on the proposed ROW, but non-target plants could be injured by herbicide drip, over spray, drift or accidental discharge. Herbicide drift should not be an issue, however, because such drift can be minimized and managed through proper application techniques under proper environmental conditions. As part of the proposal, applicators would be appropriately trained on the effects of wind and other environmental conditions on off-site herbicide movement. Weather would be monitored and herbicide applications would be suspended if temperature, humidity or wind speeds become unfavorable (See Section *8.1 AIR QUALITY*).

The introduction of herbicide applications, as described in the proposal, would result in vegetation on the ROW becoming comprised mostly of low growing plant species including shrubs, ferns, grasses, forbs and low growing tree species, such as dogwoods. The majority of the taller growing tree species would be eliminated over time by the herbicide applications. The utilization of herbicides would also result in an increase in the diversity of the vegetation within the ROW. Through the use of herbicides, woody-stemmed species within the ROW would be reduced or eliminated, and competition for low growing species would be reduced. Many of these low growing species require open areas to thrive and with the absence of tree cover, low growing plant communities can better become established. In some instances, under the right conditions, seeds that may be present on the ROW and have a long period of viability will germinate.

The proposed transmission line ROW would not change the overall land use, forest types or stand conditions within the wooded portions of the project area and, as a result, fragmentation of the forested lands within the area would not be a concern. Forest fragmentation occurs when the land use of a block of forested land is changed in such a manner that one section of the forest becomes isolated from the other, i.e., establishment of a strip coalmine or construction of a shopping center. The proposed ROW would resemble an area that has been naturally disturbed by a strong straight-line wind and would not result in isolating sections of the forest. Vegetation in the proposed ROW would ultimately consist of shrubs, grasses and forbs, which would not present a barrier to wildlife species, and wildlife could traverse or move about within the ROW.

The cumulative effect on the vegetation of the project area by creating the proposed ROW and maintaining it with herbicides would be a reduction of tall growing plant species and an increase in shrub, forb and herbaceous species. The indirect cumulative effect would be the establishment of a relatively stable low growing plant community requiring minimal treatment in the future. The proposed ROW would promote a more stable, lower growing plant community, resulting in increased diversity of wildlife habitat and decreased intensity of management in the future.

8.8 WILDLIFE

Different wildlife species require different habitats composed of unique arrangements of food, water and cover to survive. As changes in habitats occur, the variety and abundance of wildlife species change, as well. The cutting of the vegetation from the proposed transmission line ROW as described in the proposed project may change the movement of wildlife through the ROW in wooded areas due to the cut vegetation. The proposed ROW would produce a linear opening in wooded areas where wildlife habitat would be changed from forested land to early successional type habitat. Bird species favoring this type of successional habitat, such as the eastern towhee, northern cardinal, song sparrow, eastern bluebird, white-eyed vireo, northern bobwhite quail and the prairie warbler would benefit by the proposed transmission line ROW. The proposed ROW would also provide habitat for a number of small mammal species and birds of prey. Wildlife species favoring forested type habitats, such as wood thrush, red-eyed vireo, eastern wood pewee and the ovenbird would not benefit from the proposed ROW. Due to the large amounts of forested areas in the region in relation to the relatively small amount that would be affected by the proposed electric transmission project, the wildlife species favoring the forested type habitat should not be significantly affected.

Construction of the proposed ROW would result in the development of edge habitat. Edge habitat may occur when two plant communities meet. The edge habitat established by the proposed ROW would generally be between a forested and a grass/forb plant community. Shrubs and young trees would grow to form the edge, or transition zone from grass/forb to forestland. The proposed ROW is 100 feet wide. The width of the edge would eventually be approximately 10 feet along either side of the ROW. The width of the ROW would probably provide nesting habitat for bird species, such as, the white-eyed vireo, yellow-breasted chat, northern cardinal, wild turkey and song sparrow.

The cutting blades of the mechanical equipment used to clear the proposed ROW could injure or kill individual wildlife species caught by the equipment, such as small mammalian, amphibian and reptile species, and nesting birds. The noise produced by the cutting machinery may have short-term impacts to wildlife species in and around the ROW by causing these species to avoid the immediate area. The exhaust from the engines of the machinery could result in the movement of wildlife out of the treatment area on a short-term basis. However, the components of exhaust are volatile and would probably move out of the immediate project area within a short period of time.

The proposed transmission project could potentially affect fish and other aquatic species living in, and downstream from, the project area should a large amount of sediment be eroded from the construction sites and be introduced to the surface water system and transported downstream. However, the proposed project is designed to prevent this from happening by reducing the potential of erosion runoff. As described in Section *8.2 WATER QUALITY,* EKPC would be implementing *Best Management Practices* (BMPs), as well as other erosion protection measures, to prevent non-point source pollution and sediment damage to water quality. As a result, fish populations living in, or downstream from, the proposed project area should not be affected as a result of implementing the proposed project.

The proposed use of herbicides by EKPC to manage vegetation within the proposed transmission line ROW would not be expected to have any adverse effects on the wildlife, fish or other terrestrial or aquatic species living in and around the proposed project area. The herbicides that would be used on the ROW would be approved by EPA and would be strictly applied according to label directions by licensed applicators.

No significant cumulative effects to the wildlife of the project area would occur should the proposed electric transmission project be approved and constructed. As outlined above, the proposed project would not be expected to have any adverse effects on terrestrial and aquatic wildlife species, and some species would benefit from the proposed new ROW.

8.9 THREATENED, ENDANGERED OR RARE SPECIES

EKPC conducted a biological survey, including a mist netting survey, on the proposed electric transmission project impact area, the purpose of which was to determine the possible presence/absence of any rare, threatened, or endangered species in the area. (NOTE: Eggert's sunflower *(Helianthus eggertii)* was included in the survey but this plant has subsequently been removed from the endangered species list.) The surveys did not uncover the presence of any of these species with the exception of six federally endangered gray bats *(Mytois grisescens)* that were captured during the mist netting surveys. The project corridor was subsequently surveyed for the presence of caves and sinkholes that could serve as roosting habitat for the gray bat and none were found (See EKPC letter from Mr. Joe Settles to Mr. Lee Andrews, U.S. Fish and Wildlife Service, September 2, 2005, and EKPC letter from Mr. Joe Settles to Mr. Lee Andrews, U.S. Fish and Wildlife Service, May 9, 2006, Appendix C, as well as, the MIST NETTING SURVEY REPORT, Appendix E). As a result of the surveys conducted, EKPC determined that the proposed electric transmission line project would not adversely affect threatened or endangered species. EKPC sent the results of the surveys to the U.S. Fish and Wildlife Service for review and the U.S. Fish and Wildlife Service (USFWS) concurred with EKPC's determination (See USFWS letter from Mr. Virgil Lee Andrews, Jr. to Mr. Joe Settles, EKPC, October 5, 2005, Appendix C).

The Kentucky Department of Fish & Wildlife Resources (KDFWR) was contacted regarding the proposed project in relation to threatened and endangered species. The KDFWR responded that it was concerned regarding possible effects on the Indiana bat *(Mytois sodalis)*, as well as a several federal and state listed mussels (See KDFWR letter from Mr. Doug Dawson to Mr. Gary W. Gilpin, GILPIN GROUP, September 26, 2005, and GILPIN GROUP letter from Mr. Gary W. Gilpin to Mr. Doug Dawson, April 26, 2006, Appendix C). However, during the mist netting surveys no Indiana bats were captured, indicating the absence of this species in the project area. Therefore, the proposed transmission line project would not have any adverse effects on the Indiana bat (See MIST NETTING SURVEY REPORT, Appendix E). Additionally, due to the erosion and sedimentation control measures that would be implemented for the proposed project (See Section *7.2 WATER QUALITY*), the construction and operation of the proposed electric transmission line would not have adverse effects on the concerned mussels.

Since the proposed transmission project would not have any adverse effects on threatened or endangered species, cumulative effects on such species by the proposed project would not be expected to occur.

8.10 CULTURAL RESOURCES

During consultation with EKPC regarding the proposed electric transmission project, the Kentucky Heritage Council, State Historic Preservation Office (SHPO) determined that the portion of the proposed project that would involve the rebuilding of the existing electric utility line on existing ROW, and the section of the proposed project that would be located immediately adjacent, and parallel, to existing electric utility line ROWs, would not have an effect on cultural resources. However, the SHPO identified five previously surveyed sites that are located in the project area and, as described in Section *7.0 EXISTING ENVIRONMENT*, requested a cultural historic reconnaissance survey of the project area and a reevaluation of the five previously identified sites (See EKPC letter from Mr. Joe Settles to Mr. David Morgan, Kentucky Heritage Council, December 7, 2005, and SHPO letter from Mr. David L. Morgan to Mr. Gary W. Gilpin, GILPIN GROUP, April 19, 2006, Appendix C), which EKPC had performed. Based on information supplied by the SHPO, along with the survey results, the survey report determined there are no known historic properties or sites that are listed or proposed for listing in the National Register of Historic Places located in the project impact area. The survey report also determined that there is one known historic site (aboveground resource) in the project area that appears to be eligible for listing, the Gladdish-

Asher property located on the southern side of U.S. Highway 68; and one industrial archaeological resource potentially eligible for listing comprised of a large quarry located on the Perkins' property on the northern side of U.S. Highway 68. Based on the results of the survey, a determination of *no adverse effect* was made pertaining to the Gladdish-Asher property due to the existing visual intrusion within the property's viewshed. Additionally, the proposed transmission line within the current viewshed of the Gladdish-Asher property would not adversely affect those qualities for which the dwelling achieves architectural significance (See Cultural Resource Survey & Determination of Effect, Appendix F, for more detailed information). Regarding the large quarry located on the Perkins' property, the proposed transmission line route does not traverse the quarry area and, therefore, this proposed project would not have any effect on this archaeological resource.

In addition to the above described survey, EKPC placed newspaper advertisements in the February 27 & 28, 2006 edition of the *Bowling Green Daily News*, in accordance with 36 CFR Part 800 of the *National Historic Preservation Act*, as amended, soliciting consulting parties who have a demonstrable interest in important historic and archaeological resources in the project impact area. No respondents replied to EKPC as a result of the newspaper advertisement. EKPC also contacted by letter nine Native American Indian tribes who could potentially have an interest in the proposed project (See EKPC letters from Mr. Joe Settles to various Native American Indian tribes, March 1, 2006, Appendix C). Of the nine tribes contacted, two written responses were received. One expressed no interest in the proposed project (See Miami Tribe of Oklahoma letter from Ms. Julie L. Olds to Mr. Joe Settles, EKPC, March 7, 2006, Appendix C), and the other requested that it be notified should any items falling under the *Native American Graves Protection and Repatriation Act* be discovered during construction activities (See Peoria Tribe Of Indians Of Oklahoma letter from Mr. John P. Froman to Mr. Joe Settles, EKPC, March 8, 2006, Appendix C). EKPC is committed to complying with this request. EKPC also sent letters to the Warren County Judge Executive and the Mayor of Bowling Green, informing them of the proposed project and requesting that they contact an EKPC representative should they desire to participate in the Section 106 review process as a consulting party. Ms. Walker, Mayor of Bowling Green, designated via email that Ms. Robin Zeigler, Historic Preservation Officer for Bowling Green is the appropriate contact for this project. Ms. Zeigler is considered a consulting party for the project.

No significant cumulative effects to cultural resources would be expected should the proposed electric transmission project be approved and constructed because, as outlined above, the majority of the proposed project would not have an effect on important cultural resources. Based on the survey results, the proposed project also would not have any adverse effect on the Gladdish-Asher property, and would not have any effect on the quarry located on the Perkins' property.

<u>NOTE</u>: For the purposes of project review, the consultation process under the Section 106 of the *Historic Preservation Act* and the NEPA review process have been combined and will proceed concurrently for this proposed project.

8.11 TRANSPORTATION

The construction of the proposed electric transmission project would not have any significant effect on transportation taking place within the proposed project area.

The construction of the proposed electric transmission line could minimally increase traffic within the project area through the movement of construction vehicles along the proposed route. However, this increase in traffic would be temporary and there would be a return to normal conditions upon completion of construction activities. Maintenance of the proposed transmission line would not be expected to have any impact on traffic flows or patterns within the project area.

The construction of the proposed transmission line could also have a temporary effect on transportation in the project area through temporary road closures. During the construction of the proposed line, the electrical conductors would be strung on the support structures using a pulley system and helicopter, or with a tensioner mounted on the back of a digger/derrick truck. At the proposed transmission line crossings some of the roads may have to be temporarily closed for safety purposes during the stringing of the electrical conductor onto the support structures. These road closures could range in duration from the halting of traffic for minutes to temporary closing the road for up to four hours based on the width of the road and the complexity of the crossing. These temporary road closings would not be expected to have any significant impacts on transportation in the area because once the aerial crossing is completed the road would be reopened, and traffic flows and patterns would return to normal. EKPC would coordinate the proposed transmission line construction with the Kentucky Transportation Cabinet and would secure all the required permits for the road and highway crossings prior to construction.

The Barren River is recognized by the U.S. Army Corps of Engineers as being navigable in the proposed project area; however, the crossing of this river by the proposed transmission line is not expected to have any significant impact on river transportation. Should any river traffic need to be halted during construction, it would most likely only involve small pleasure craft, if any. Additionally, the halting of river traffic would be temporary and would resume once the stringing of the conductor over the river crossing is completed. EKPC would also secure the necessary river crossing permits from the U.S. Army Corps of Engineers for the crossing of navigable waters under the authority of the *Rivers and Harbors Act of 1899.*

As described above, the proposed project would have only minimal temporary effects on transportation within the project area and, as result, would not have any cumulative effects on transportation.

8.12 NOISE

Noise from the proposed construction activity associated with the proposed project would have a very minor impact on noise levels in the immediate project impact area. Noise would emanate from chainsaws and machinery used during ROW clearing activities, and from vehicles, machinery and equipment used during the physical construction of the proposed project. However, this increase in noise levels would be short-term and there would be an immediate return to ambient noise levels upon completion of construction activities. Since the proposed project would have only short-term minor impact on the noise levels within the project area, no cumulative impacts on noise levels would occur.

8.13 HEALTH & SAFETY

The clearing of vegetation associated with the proposed electric transmission line could have an effect on the health and safety of construction crewmembers, as well as the public in general. One common tool used for manually cutting and clearing vegetation in the electric utility industry is the chainsaw. The chainsaw can be one of the most dangerous hand cutting tools used by ROW management crews and cuts caused by these tools can be encountered by crewmembers. Other hazards associated with chainsaw use include flying wood chips, sawdust and bar oil causing eye problems for workers. Another hazard associated with chain saw use could be hearing loss if proper ear protection is not used. However, if the chainsaws are operated in a safe manner adhering to EKPC's safety rules with protective clothing, eye ware, and ear protection, injuries from chainsaws should not present a problem.

Mechanical types of equipment used during construction activities, such as bulldozers, could also pose a hazard to construction workers. This type of equipment could rollover when operated improperly on steep grades injuring the operator and any nearby crewmembers who happen to be in the way. Fire can also potentially be a hazard to ROW crewmembers attempting to refuel hot engines or when leaked oil or flammable debris comes into contact with hot engines.

Emissions from the exhaust of chainsaws and mechanical equipment could result in exposing operators to a number of carcinogens known to be present in the exhaust of internal combustion engines, such as benzene, 1,3-butadiene and numerous polyaromatic hydrocarbons. Exhaust from the engines also expose equipment operators to carbon monoxide and neurotoxic hydrocarbons, as well as irritants, such as, formaldehyde, acrolein and nitrogen oxides. However, the components of exhaust are volatile and would probably move out of the immediate project area within a short period of time.

Hazards to the general public could occur during vegetation clearing activities if individuals were to enter work areas while machinery is operating and the vegetation is being cut. Individuals of the public present on or near the work sites when the cutting operations are occurring could be struck by falling vegetation, flying wood chips, sawdust, etc. Stubble left on the ROW after cutting operations are completed can also present a hazard to the public by individuals tripping over or falling onto cut stumps and stubble causing injury. Since no formal recreational activities take place within the project area (See Section *8.6 LAND USE AND RECREATION*) and the majority of the transmission line route is located in rural areas, the risk to the general public from ROW clearing cutting operations would be negligible. This risk would not be present during the maintenance of the proposed ROW because only minimal, if any, cutting of vegetation on the ROW would be required during each maintenance cycle.

The proposed use of herbicides for the management of vegetation within the proposed ROW would involve the utilization of herbicides approved for such use by the U.S. Environmental Protection Agency. Such chemicals would also be applied according to strict label directions by licensed applicators. Therefore, the proposed use of herbicides would not be expected to pose any significant risk to workers or the general public.

The proposed transmission project would not have any cumulative effects on the health and safety of the general public and construction crew workers because the risk to such individuals as a result of constructing the proposed project would be minimal.

8.14 RADIO, TELEVISION & CELLULAR PHONE INTERFERENCE

The proposed electric transmission line should not have any effect on radio or television reception because electric transmission line equipment by design does not cause radio or television reception interference. However, faulty insulators or loose hardware on a transmission line can cause such interference. Should EKPC receive a reception interference complaint it has a policy of investigating the source of the interference and taking steps to remedy the situation, such as replacing insulators, tightening hardware, etc., should the source of the problem be determined to be electric equipment associated with one of its electric facilities. Additionally, the proposed electric transmission line would not be expected to cause radio or television reception interference because the majority of the proposed route extends through rural areas and the distance of the occupied structures from the proposed transmission line ROW.

Mobile and automobile radios could lose signal strength directly underneath the proposed electric transmission line, such as a loss of signal strength when traveling underneath the transmission line at a road or highway crossing. Cellular telephones could also lose signal strength directly underneath electric transmission line when located in a fringe area of the cellular service companies. However, these would be temporary, or momentary, losses of signal strength that would not significantly affect the use of mobile or automobile radio, or cellular telephone equipment. Therefore, no cumulative effects are expected as a result of the proposed action

8.15 SOCIOECONOMICS & ENVIRONMENTAL JUSTICE

The proposed new electric transmission line project would not have any effect on the population or the economy of the area. The proposed new line also would not create new jobs or affect the unemployment rate for the area involved. Additionally, the proposed route for the transmission line is not disproportionately located through minority or low-income areas and, as a result, the proposed transmission line would not have any disproportionate effects on populations located in such areas. The proposed project also would not have any impact on, or be influenced by, the civil rights, ethnic origin, sex or social status of people living within the proposed project area.

8.16 AESTHETICS

The construction of the proposed electric transmission line would not have significant impacts on the aesthetics of the project area. The proposed new line would not be visible from any recreational areas since none of these types of areas exist within the project area (See Section *7.0 EXISTING ENVIRONMENT*). The proposed new transmission line would also be supported by Corten tubular steel structures that would give the appearance of redwood and which would aid in blending the proposed line into the surrounding background. In addition, the majority of the proposed new line would be located on an existing electric transmission line ROW and would involve rebuilding and replacement of the existing electric transmission line. As a result, the proposed new line would be very similar in appearance to the existing line and would not result in any significant additional aesthetic impact within these areas. A 2.42 mile section of the proposed new transmission line would also parallel existing electric transmission lines and the potential aesthetic impact of the proposed new line within this section would be somewhat mitigated by the aesthetic impact which the existing lines currently have on the area. Additionally, the proposed new line section located on the western end of the route extending in a north-south orientation, and not located on existing ROW or paralleling existing transmission lines, is located in a rural area. This new line section is not located in the vicinity of any concentrated residential development and would not be readily visible from such development. The proposed new line on the western end of the route would be visible from various road crossings, but due to the topography and vegetation in the area the line would only be visible for short distances and the Corten steel structures would aid in blending the line into the surrounding landscape.

As described above, the majority of the proposed electric transmission line route would involve rebuilding existing electric lines, and due to the materials that would be used coupled with the vegetation and terrain in the project area, the proposed project would have minimal effects on the aesthetics of the area. As a result the proposed project would not be expected to have any significant cumulative impacts on the project area.

9.0 MITIGATION

As described in the previous section *8.0 ENVIRONMENTAL CONSEQUENCES*, EKPC would be implementing numerous mitigation measures to aid in minimizing potential environmental impacts that could be caused during the construction and operation of the proposed electric transmission project. The following is a summary of the mitigation measures that EKPC would implement:

- EKPC would incorporate *Best Management Practices* that would employ accepted erosion control practices to aid in preventing non-point source pollution and control stormwater runoff and sedimentation. Such practices would include, but not be limited to, the utilization of silt barriers, the cutting of vegetation requiring removal from the proposed ROW to leave roots intact and minimize soil disturbance, not initiating any land-clearing activities until absolutely necessary to reduce the amount of time bare soils are exposed, removing any vegetation falling into watercourses, and all disturbed areas would be stabilized and revegetated, as soon as practicable, once construction is completed.

- No transmission line support poles would be placed within streams or river channels, and no construction equipment or vehicles would be permitted to ford such watercourses, or within wetland areas.

- Vegetation removed from the proposed ROW would be cut from the ROW, leaving roots intact to aid in holding soils in place and control erosion.

- Any cut vegetation falling into river or stream channels would be removed and pulled back from the channels to aid in protecting water quality.

- Herbicides would be applied by trained and licensed applicators, and would be made in accordance with strict label directions and the requirements of the Kentucky Division of Pesticides, using EPA approved herbicides.

- Applicators would monitor weather conditions and would postpone or suspend applications when conditions become unfavorable, as outlined in Section *8.1 AIR QUALITY*.

- No herbicide would be applied within 30 horizontal feet of lakes, ponds, wetlands, perennial or intermittent springs, seeps, or streams.

- No herbicide would be applied within 100 horizontal feet of any public or domestic water source.

- Herbicide mixing, loading, or cleaning areas would not be located within 200 feet of any open water, or public or domestic water source.

- Herbicide applications would not be prohibited during periods of rain or when the threat of rainfall is imminent.

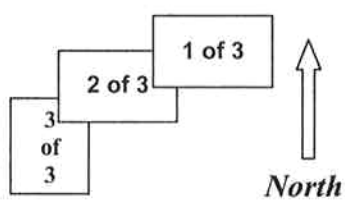
10.0 CONCLUSION

The environmental investigation undertaken for EKPC's proposed GM to Memphis Junction Electric Transmission Line, and documented in this report, did not uncover any significant environmental impacts that would result from the construction of the proposed project. EKPC is also aware of the environmental commitments expressed in this document and is dedicated to following these commitments during the construction and operation of the proposed facility. Therefore, the construction of EKPC's proposed new electric transmission line would not have any significant effects on the quality of the natural or human environment in the project area.

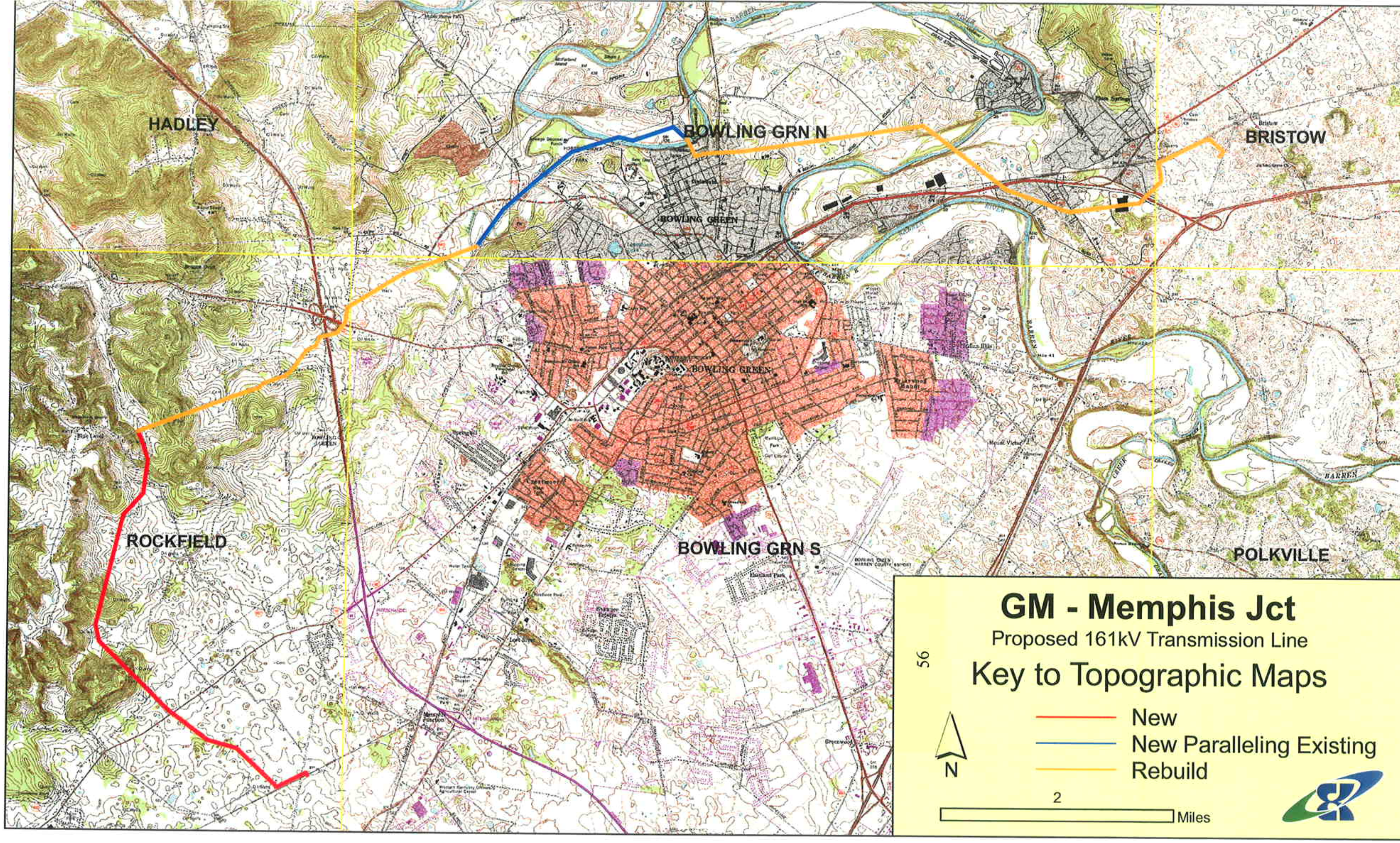
APPENDIX A

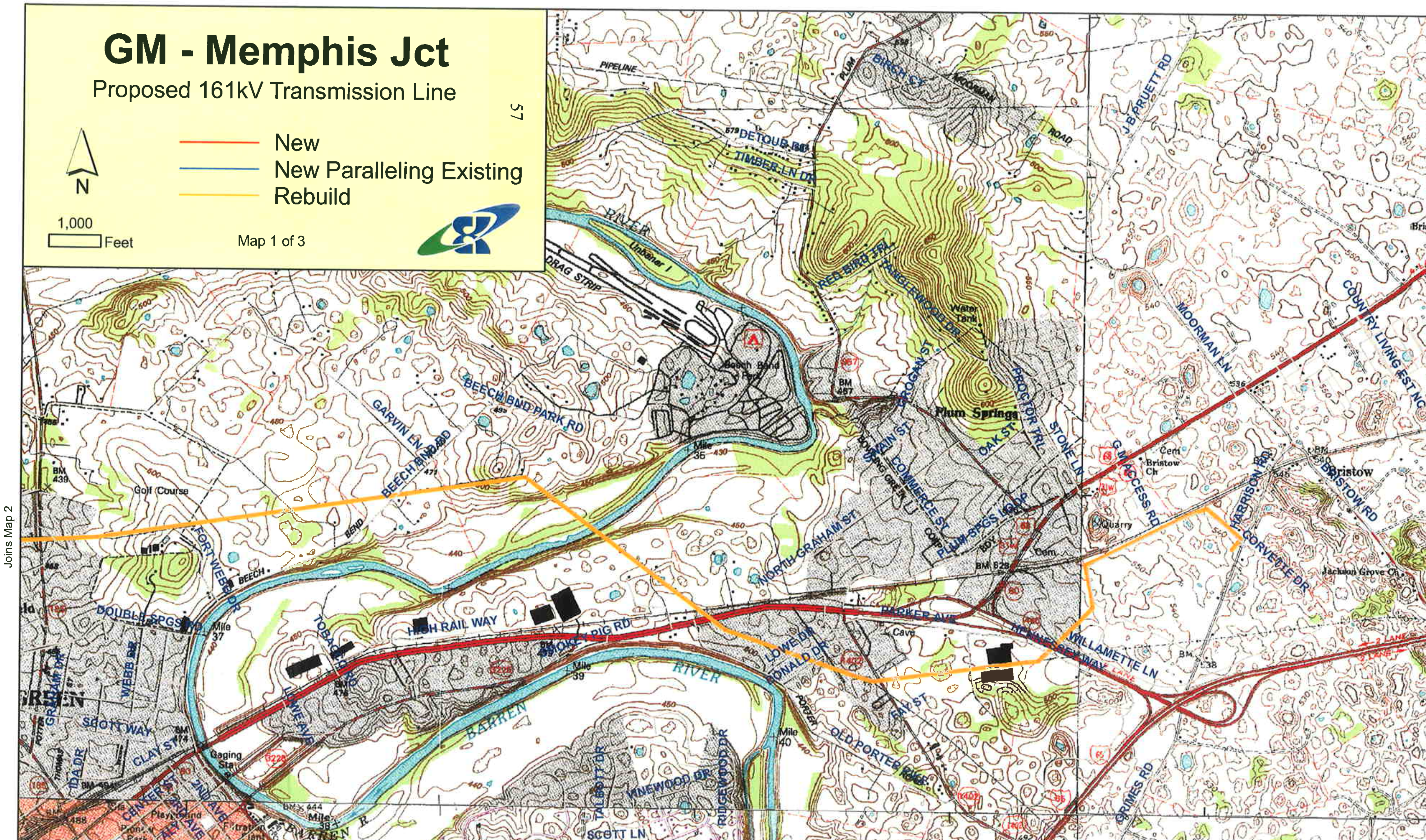
PROJECT REFERENCE MAPS

KEY TO PROJECT MAPS

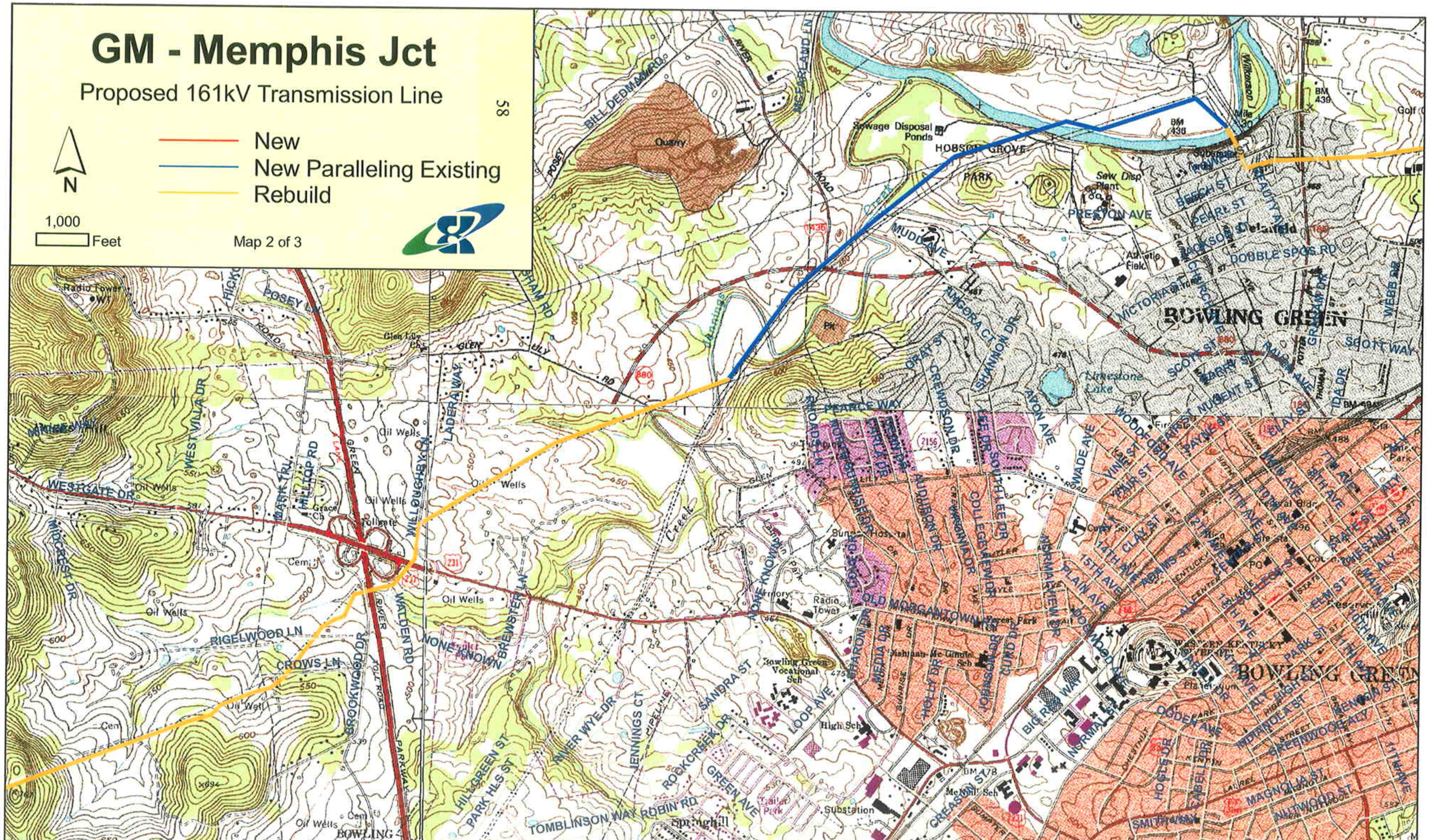


NOTE: The proposed electric transmission line route depicted on the maps contained in this appendix is not drawn to exact scale and is intended for location purposes only.


HADLEY
BOWLING GRN N
BRISTOW
ROCKFIELD
BOWLING GRN S
POLKVILLE
GM - Memphis Jct
Proposed 161kV Transmission Line
Key to Topographic Maps
N
New
New Paralleling Existing
Rebuild
2
Miles



GM - Memphis Jct
Proposed 161kV Transmission Line
57
N
New
New Paralleling Existing
Rebuild
1,000
Feet
Map 1 of 3
Joins Map 2
Plum Springs
Golf Course
BARREN RIVER
DRAG STRIP
Bristow
MOORMAN LN
COUNTRY LIVING EST NC
J B PRUETT RD
GM ACCESS RD
STONE LN
PROCTOR TRL
OAK ST
COMMERCE ST
NORTH GRAHAM ST
PLUM SPGS LOOP
HARRISON RD
BRISTOW RD
CORVETTE DR
WILLAMETTE LN
PARKER AVE
LOWE DR
DONALD DR
CLAY ST
OLD PORTER PIKE
GRIMES RD
HIGH RAIL WAY
SMOKEY PIG RD
TOBACCO RD
DOUBLE SPGS RD
FORT WEBB DR
SCOTT WAY
WEBB DR
IDA DR
CLAY ST
CENTER ST
2ND AVE
TALBOTT DR
VINEWOOD DR
RIDGEWOOD DR
SCOTT LN
GARVIN LN
BEECH BEND RD
BEECH BND PARK RD
DETOUR RD
TIMBER LN DR
RED BIRD TRL
PIPELINE
BIRCH CT



GM - Memphis Jct

Proposed 161kV Transmission Line

58

N

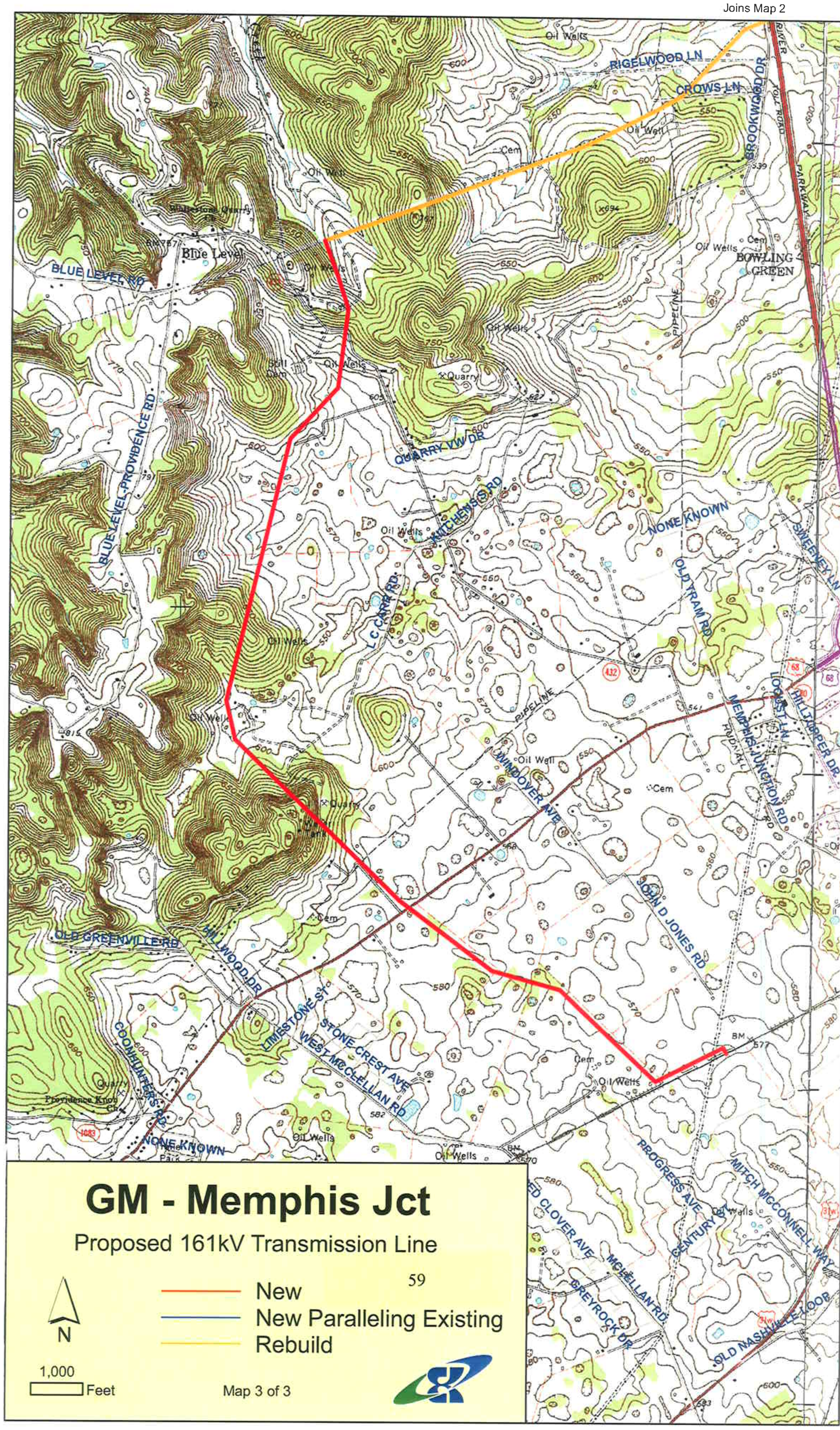
New

New Paralleling Existing

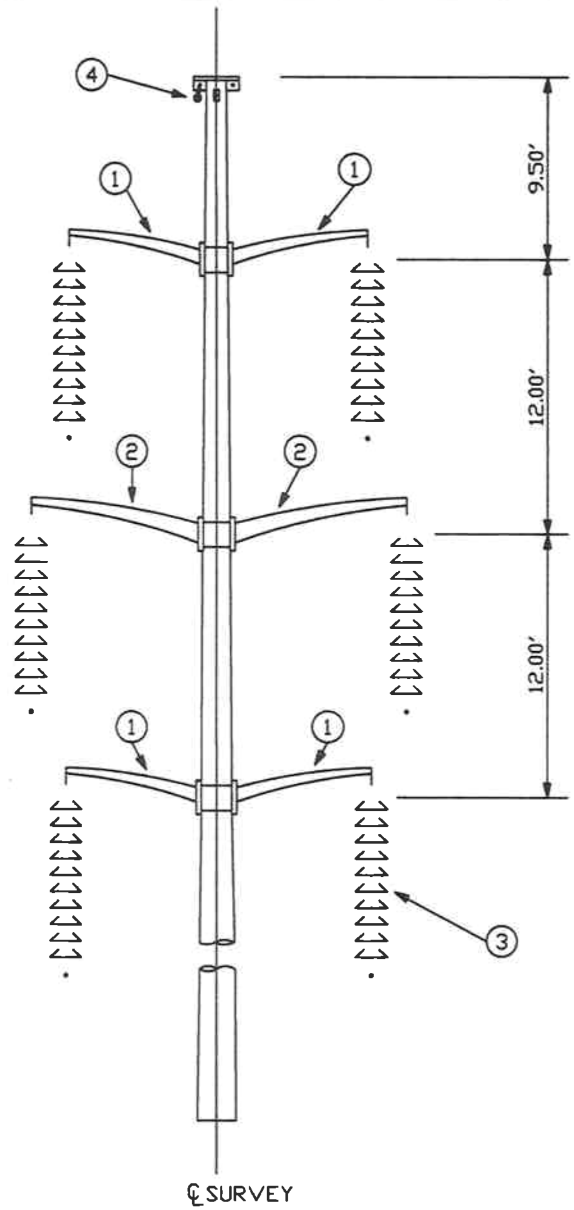
Rebuild

1,000 Feet

Map 2 of 3


Joins Map 2
GM - Memphis Jct
Proposed 161kV Transmission Line
New
New Paralleling Existing
Rebuild
N
1,000
Feet
Map 3 of 3
RIGELWOOD LN
CROWS LN
BROOKWOOD DR
BOWLING GREEN
BLUE LEVEL RD
Blue Level
BLUE LEVEL-PROVIDENCE RD
QUARRY VW DR
KITCHENS RD
NONE KNOWN
OLD TRAM RD
SWEENEY LN
L C CARR RD
PIPELINE
WINDOVER AVE
MEMPHIS JUNCTION RD
LOCUST LN
HILLTOPPER DR
JOHN D JONES RD
OLD GREENVILLE RD
HILLWOOD DR
LIMESTONE ST
STONE CREST AVE
WEST MCCLELLAN RD
COONHUNTERS RD
NONE KNOWN
PROGRESS AVE
CENTURY ST
MITCH MCCONNELL WAY
RED CLOVER AVE
MCLELLAN RD
GREYROCK DR
OLD NASHVILLE LOOP

APPENDIX B
TRANSMISSION SUPPORT STRUCTURE DIAGRAMS



TUD-1S-161		LIST OF MATERIALS			
DWG. REF.	QTY	DESCRIPTION	ITEM	DET.	CODE
1	4	STEEL ARM ASS'Y HVY DUTY, 8 FT.		TM-115C	
2	2	STEEL ARM ASS'Y HVY DUTY, 9 FT.		TM-115C	
3	6	INSULATOR ASS'Y TANGENT		TM-1B-161	
4	1	OPGW ASSEMBLY, TANGENT		TM-S	

NOTE:

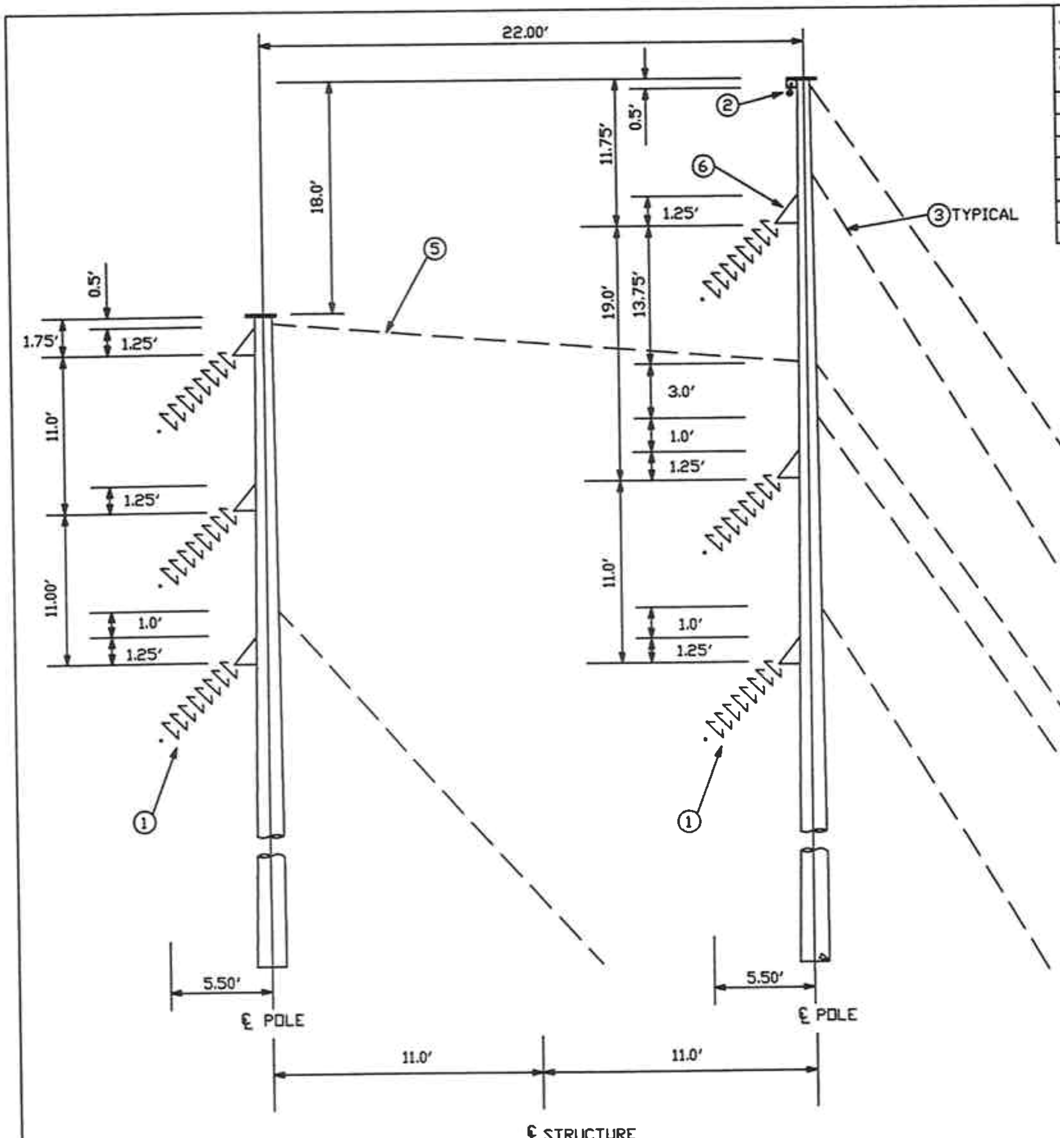
IF ARMS FOR FUTURE SIDE OF DOUBLE CIRCUIT ARE INITIALLY INSTALLED, INSULATORS MUST ALSO BE INSTALLED

TRANSMISSION LINE STEEL STRUCTURE

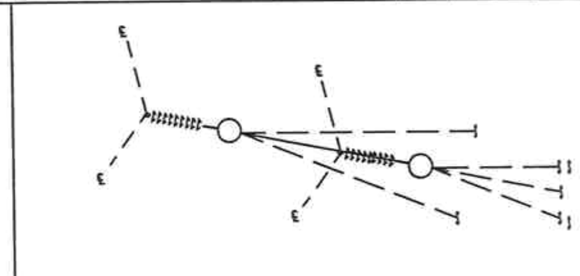
DOUBLE CIRCUIT TANGENT STEEL UPSWEEP ARMS

NO.	REVISION	DATE	
			DWN T. MUNN
			DATE 6/27/05
			CHECKED G. HARVEY

TUD-1S-161



TSD-3S-161		LIST OF MATERIALS			
DWG. REF.	QTY	DESCRIPTION	ITEM	DET.	CODE
1	6	INSULATOR ASS'Y TANGENT		TM-1C-161	
2	1	OPGW SUSPENSION ASSEMBLY		TM-SD	
3	7	GUY ASSEMBLY		TG-21A	
4	6	SWING ANGLE BRACKET (HUGHES 2822.8 OR EQ)			
5	1	TIE GUY ASSEMBLY		TG-21D	

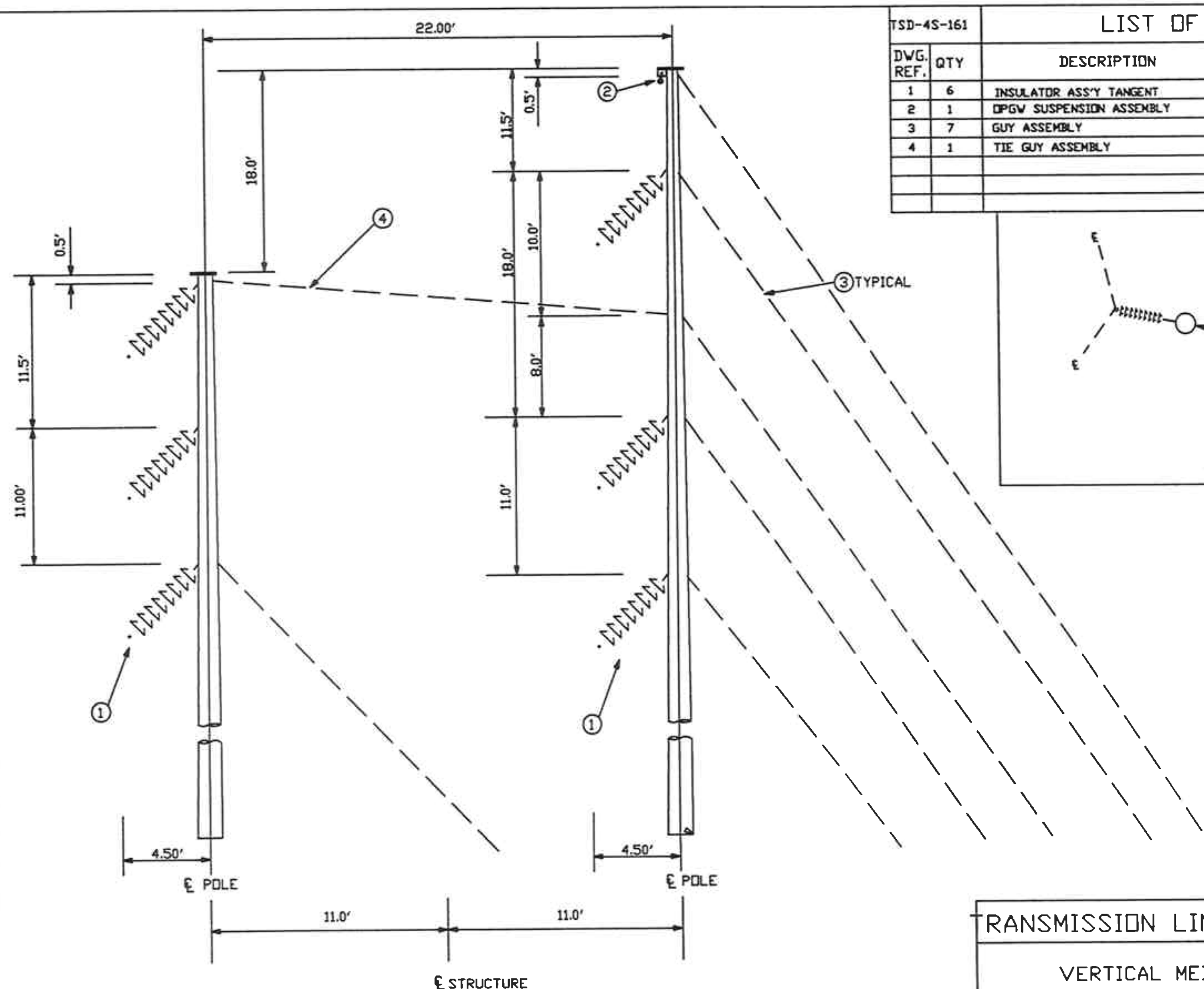


PLAN VIEW

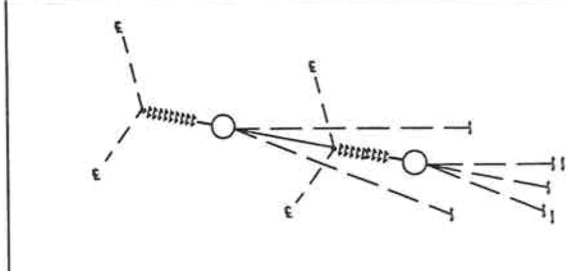
TRANSMISSION LINE STEEL STRUCTURE

VERTICAL SMALL ANGLE

NO.	REVISION	DATE	DWN C. HARVEY DATE 6/27/05 CHECKED T. MUNN	TSD-3S-161



TSD-4S-161		LIST OF MATERIALS			
DWG. REF.	QTY	DESCRIPTION	ITEM	DET.	CODE
1	6	INSULATOR ASS'Y TANGENT		TM-1C-161	
2	1	OPGW SUSPENSION ASSEMBLY		TM-SD	
3	7	GUY ASSEMBLY		TG-21A	
4	1	TIE GUY ASSEMBLY		TG-21D	



PLAN VIEW

TRANSMISSION LINE STEEL STRUCTURE

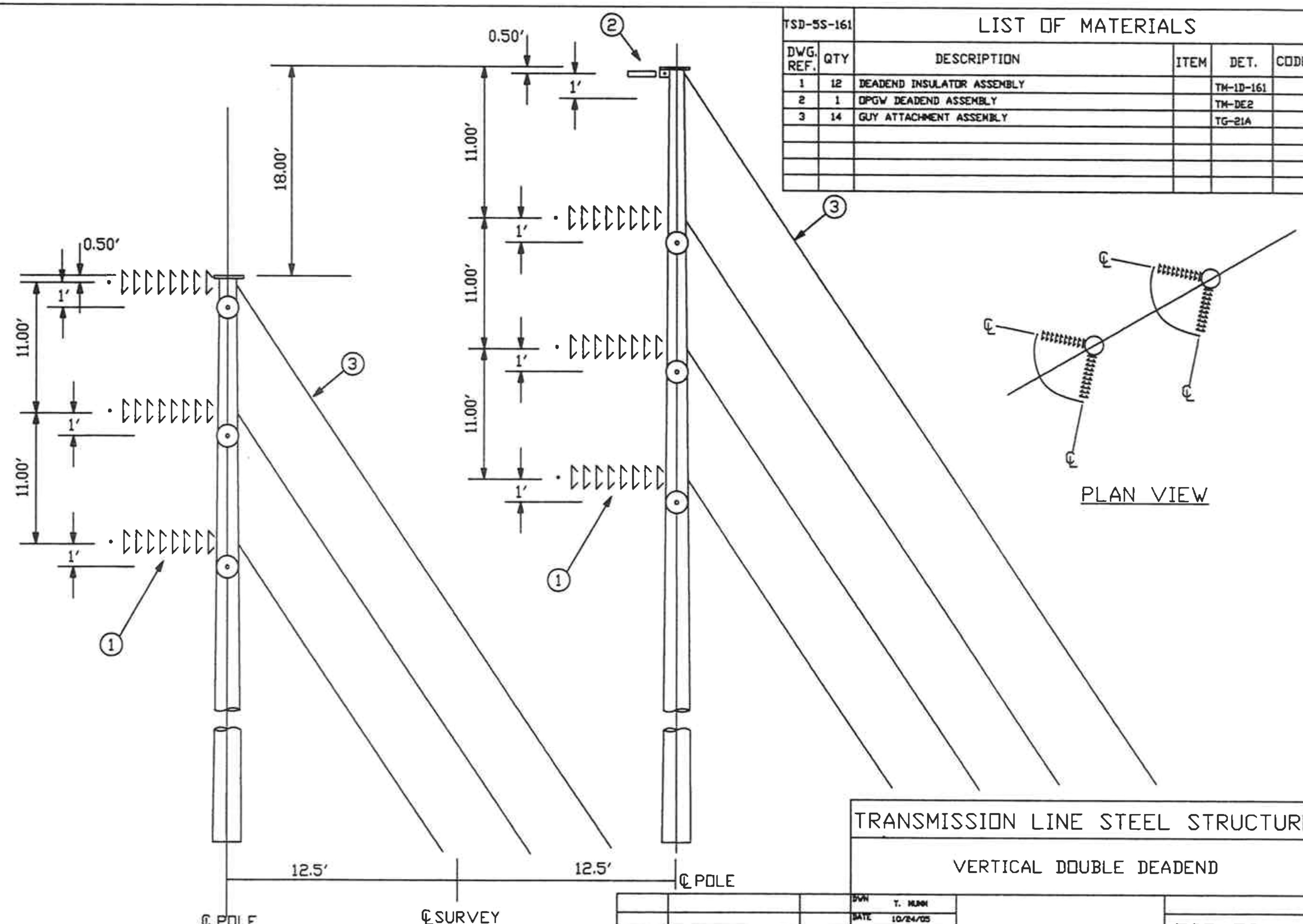
VERTICAL MEDIUM-LARGE ANGLE

NO.	REVISION	DATE

DWN G. HARVEY
DATE 6/27/05
CHECKED T. MUMM

TSD-4S-161

TSD-5S-161		LIST OF MATERIALS			
DWG. REF.	QTY	DESCRIPTION	ITEM	DET.	CODE
1	12	DEADEND INSULATOR ASSEMBLY		TM-1D-161	
2	1	OPGW DEADEND ASSEMBLY		TM-DE2	
3	14	GUY ATTACHMENT ASSEMBLY		TG-21A	



TRANSMISSION LINE STEEL STRUCTURE

VERTICAL DOUBLE DEADEND

NO.	REVISION	DATE

DWN T. MUNN
DATE 10/24/05
CHECKED XXX

TSD-5S-161

APPENDIX C
AGENCY CORRESPONDENCE

July 11, 2005

Mr. Lee Andrews
U.S. Fish and Wildlife Service
Frankfort Field Office
3761 Georgetown Rd.
Frankfort, KY 40601

Dear Lee,

Enclosed is information concerning the Indiana Bat (*Myotis sodalis*) mist-netting survey plan for the following project being considered by East Kentucky Power Cooperative (EKPC):

General Motors – Memphis Junction 161 kV Transmission Line

The project is approximately 10 miles in length and is located in Warren County in western Kentucky (See overview map). The line begins at the East Bowling Green/ General Motors Substation northeast of Bowling Green and travels west along the northern edge of the city. It then turns southwest after the third Barren River crossing and extends to just east of Blue Level. At this point, the line travels south and ends at the Memphis Junction Substation, located southwest of Memphis Junction. The majority of the project involves rebuilding an existing line to increase it from 69 kV to 161 kV. A portion of the line, running from the second Barren River crossing to the Jennings Creek crossing, will be new line that parallels an existing line. Another section, extending from Blue Level south to the Memphis Junction Substation, will be new transmission line.

The parallel and rebuild sections of the line will require extensions of the current rights-of-ways (ROWs), with a maximum of 70 additional feet for the parallel section and 30 additional feet (15 on each side) for the rebuild section. The extension of the existing ROWs will require the clearing of some trees and could potentially affect the Indiana bat. Therefore, a mist-netting survey plan is being created to address this issue.

EKPC biologists surveyed the 10 miles of existing powerline ROW and concluded that approximately 2 miles are bordered by wooded areas. EKPC biologists classified the wooded areas into one of three categories: good, marginal, and poor. These categories are described as:

> **<u>Good</u>** – the wooded areas provide adequate foraging habitat, potential roost trees, and are connected to other sections of habitat of the same quality.

Marginal – the wooded areas provide some opportunities for foraging, but the majority of the area has a thick understory. The trees in this designation are fairly young in age with little development of cavities, crevices, and exfoliating bark providing limited roosting opportunities for Indiana bats.

Poor – the wooded areas provide very little opportunity for foraging. The wooded areas have a dense understory, trees are very young, and the area resembles the late stages of old field succession. Potential roost sites are very limited and it is estimated that no potential roost trees occur in this habitat type.

The section of the line with the most wooded area begins west of the Natcher Parkway and extends southwest to KY 432. This section of the line is being rebuilt, but the current ROW is wide enough to accommodate the upgrade. Therefore, this section will not require any additional clearing of trees.

The remaining portion of the line contains less than 1 mile of wooded habitat. Two small, wooded areas contain woods that may provide habitat suitable for the Indiana bat. These areas are marked on the enclosed maps and described below.

1) **Barren River crossing (Map 1).** This site has good woods along both sides of the river, with wooded roads running parallel to the river on the north side. We propose one mist-netting site here over the river and along the roads.

2) **Jennings Creek crossing (Map 2).** This area contains good woods along the banks of the creek, with a larger area of woods located adjacent to the south side of the creek. One mist-netting site is proposed for this area over the creek.

Please review this proposal for a mist netting survey for the Indiana Bat. After surveying the project area, we feel this proposal is more than adequate to determine the presence/probable absence of this species in the project area. Once the survey has been completed, a detailed report of our results will be submitted to your office for comment. We are also in the process of surveying the project area for other federally threatened and endangered species that may occur there. We are surveying the area for species such as Price's potato-bean, Eggert's sunflower, and gray bats. We will submit the results of these surveys as well with the mist netting report.

I would appreciate your comments on this proposal for mist-netting as soon as possible. If you have any questions concerning this or any of our projects please feel free to contact me at your convenience. Thank you for taking the time to address our concerns.

Sincerely,

Joe Settles
Supervisor
Natural Resources and Environmental Communications

EAST KENTUCKY POWER COOPERATIVE

September 2, 2005

Mr. Lee Andrews
U.S. Fish and Wildlife Service
Frankfort Field Office
3761 Georgetown Rd.
Frankfort, KY 40601

Dear Lee:

Enclosed is information concerning the environmental impact for the following project being considered by East Kentucky Power:

General Motors – Memphis Junction 161 kV Transmission Line

I am enclosing a set of topographic maps that outline the project area. A survey of the project area was conducted to determine the presence/absence of any rare, threatened, or endangered species. Our survey work was focused on the following federally threatened or endangered species that occur or historically occurred near the proposed project:

Myotis sodalis – Indiana bat
Myotis grisescens – Gray Myotis
Apios priceana – Price's Potato-bean
Helianthus eggertii – Eggert's Sunflower

A mist netting survey was conducted to determine the bat species that are found in the proposed project area. A report detailing the mist netting efforts is enclosed for your review. Also included in the report is a description of the proposed project and the habitat encountered in the area.

No Indiana bats were captured in the project area. Therefore, Indiana bats should not be adversely affected by the proposed project.

Gray bats were captured during our survey efforts. In order to assess impacts on the roosting habitat for gray bats, the project corridor was surveyed for the presence of caves or sinkholes that may serve as roosting habitat for this species. Although the project area is a well-documented karst region, no caves or sinkholes are located in the proposed powerline that provide roosting habitat for this species. A few sinkholes and caves were

4775 Lexington Road 40391
P.O. Box 707, Winchester,
Kentucky 40392-0707

Tel. (859) 744-4812
Fax: (859) 744-6008
http://www.ekpc.com

encountered near the proposed powerline and investigated for use by bat species. None of the sinkholes/caves encountered appeared to provide suitable roosting habitat for gray bats.

All of these karst features investigated were either filled in by soil and other debris, showed signs of flooding, or did not show any signs of bat activity. Some landowners were also questioned concerning the possibility of caves in the area, and none of the landowners knew of any caves within the project corridor. Therefore, gray bats should not be adversely affected by the proposed project.

The proposed project was also surveyed to determine the presence or absence of Eggert's Sunflower and Price's Potato-bean. Neither species was discovered during the survey of the proposed project area.

We do not expect any adverse effects on threatened or endangered species from implementation of this proposed action. I would appreciate your comments regarding this project as soon as possible. Thank you for taking the time to address our concerns, and we appreciate your efforts in this matter.

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3761 Georgetown Road
Frankfort, Kentucky 40601

October 5, 2005

Mr. Joe Settles
Eastern Kentucky Power Cooperative
4775 Lexington Road
Winchester, Kentucky 40391

Subject: FWS #06-0106; Biological Assessment for the Indiana bat and gray bat, Warren County, Kentucky

Dear Mr. Settles:

Thank you for your letter and enclosures of October 5, 2004, transmitting a biological assessment (BA) for the federally listed Price's potato bean, Eggert's sunflower, Indiana bat, and gray bat in association with the proposed General Motors-Memphis Junction 161kV Transmission Line in Warren County, Kentucky. Fish and Wildlife Service (Service) biologists have reviewed the document and we offer the following comments.

According to the BA, sampling for bats took place on July 18, 20, and 21, 2005. A total of 32 bats were captured consisting of four species: the red bat, big brown bat, gray bat, and eastern pipistrelle. No Indiana bats were captured. Of the 32 bats captured, six were federally endangered gray bats. Four gray bats were adults, including a post-lactating female. The other adults were all males, two of which were in breeding condition. A juvenile female was also captured at net site 1. Since one of the bats was a post-lactating female and another was a juvenile female, which may suggest the possibility of a maternity cave in the area, the project corridor was surveyed for the presence of caves or sinkholes that could serve as roosting habitat. Based on the BA, a few sinkholes were encountered near the proposed power line, but all were either filled in by soil and other debris or did not show any signs of bat activity.

The proposed project corridor was also surveyed for the presence of Price's potato bean and Eggert's sunflower. Neither species were discovered during the survey of the proposed project area. Therefore, the proposed project is not likely to adversely affect both Price's potato bean and Eggert's sunflower. Furthermore, based on the fact that no Indiana bats were captured and because no caves or sinkholes which could provide suitable roost habitat for gray bats were found within the project corridor, the Service concurs that the proposed action is "not likely to adversely affect" the federally endangered Indiana bat and gray bat.

In view of this, we believe that the requirements of section 7 of the Endangered Species Act have been fulfilled for this project. Your Obligations under section 7 must be reconsidered, however, if: (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated that might be affected by the proposed action.\

Thank you for the opportunity to comment on this action. If you have any questions or if we can be of further assistance, please contact Mindi Brady at (502)/695-0468 (ext.229).

Sincerely,

Virgil Lee Andrews

Virgil Lee Andrews, Jr.
Field Supervisor

GILPIN GROUP
Environmental Consulting and Planning

April 10, 2006

2087 Ketchner Road
Wellsville, New York 14895
Phone: (585) 593-5696
E-mail: Gilpin@eznet.net

Virgil Lee A. Andrews, Jr., Field Supervisor
U.S. Fish and Wildlife Service
3761 Georgetown Road
Frankfort, Kentucky 40601

Dear Mr. Andrews:

East Kentucky Power Cooperative (EKPC) of Winchester, Kentucky is proposing the following changes to the proposed GM - Memphis Junction Transmission Line that was review by your agency late last fall:

- Realignment of a 2.27 mile section of the proposed transmission line route in Warren County, Kentucky along the southern end of the route due to the requests of landowners in the area. This alignment change would be 2.90 miles in length (See enclosed map).

In addition to informing your agency of the proposed project change, we are soliciting your advice and comments pertaining to the proposed change as it relates to threatened and endangered species, wildlife, wildlife refuges, wetlands and other important natural resource concerns. Any written comments received by your agency will be incorporated into the subject environmental investigation and report.

To avoid unnecessary delays in the planning and construction of the proposed project, we would appreciate receiving your written comments within 30 days. Should you have any questions or need additional information pertaining to the proposed project, please do not hesitate to contact me at the mailing address, e-mail address or telephone number given above.

Sincerely,

Gary W. Gilpin
Environmental Scientist/Owner

cc: Joe Settles, EKPC
Enclosures

1983-2006

23

YEARS OF SERVICE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3761 Georgetown Road
Frankfort, Kentucky 40601

April 27, 2006

Mr. Gary Gilpin
2087 Ketchner Road
Wellsville, New York 14895

Subject: FWS #06-0806; Proposed Realignment for the GM-Memphis Junction Transmission Line, Warren County

Dear Mr. Gilpin:

Thank you for your correspondence of April 10, 2006, regarding the proposed realignment of a 2.27 mile section of the proposed GM-Memphis Junction Transmission Line in Warren County, Kentucky. The realignment would be along the southern end of the route due to the requests of landowners in the area. The alignment change would be 2.90 miles in length. Fish and Wildlife Service (Service) personnel have reviewed the information submitted, and we offer the following comments.

Based on the short distance of the alignment change from the original route, we do not believe it is necessary to complete additional summer mistnetting surveys. However, we do recommend that the realignment be surveyed for potential winter habitat for Indiana bats and summer and/or winter habitat for gray bats (i.e., caves, rockshelters, and underground mines). If any potential winter habitat for Indiana bats or winter and/or summer habitat for gray bats is found, we request to be notified to determine and assess any possible impacts.

Additionally, if the realignments have already been surveyed for caves, rockshelters, and underground mines, we would appreciate written correspondence from you verifying that these surveys have been completed, and the presence or absence of these features within the realignment.

Thank you for the opportunity to comment on this proposed action. If you have any questions regarding the information which we have provided, please contact Mindi Lawson at (502) 695-0468 (ext. 229).

Sincerely,

Virgil Lee Andrews, Jr.
Field Supervisor

TAKE PRIDE IN AMERICA

EAST KENTUCKY POWER COOPERATIVE

May 9, 2006

Mr. Lee Andrews
U.S. Fish and Wildlife Service
Frankfort Field Office
3761 Georgetown Rd.
Frankfort, KY 40601

Dear Lee:

Thank you for your letter dated April 27, 2006 regarding the environmental impacts of the following project:

GM – Memphis Junction Transmission Line

In your letter you requested written correspondence verifying that surveys for potential winter habitat for Indiana bats and summer and/or winter habitat for gray bats (i.e., caves, rockshelters, and underground mines). Please consider this letter as notification that the surveys have been conducted for the proposed project realignment. No feature that may provide winter habitat for Indiana bats or summer and/or winter habitat for gray bats occurs in the proposed realignment.

Thank you for your time and efforts in this matter. I look forward to working with you on future projects. If you have any questions regarding any other EKPC projects, please do not hesitate to give me a call at 859-745-9256

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

4775 Lexington Road 40391
P.O. Box 707, Winchester,
Kentucky 40392-0707

Tel. (859) 744-4812
Fax: (859) 744-6008
http://www.ekpc.coop

A Touchstone Energy Cooperative

GILPIN GROUP
Environmental Consulting and Planning

September 1, 2005

2087 Ketchner Road
Wellsville, New York 14895
Phone: (585) 593-5696
E-mail: Gilpin@eznet.net

Brian Smith, Non-Game Coordinator
Kentucky Department of Fish & Wildlife Resources
Arnold L. Mitchell Building
#1 Game Farm Road
Frankfort, Kentucky 40601

Dear Mr. Smith:

GILPIN GROUP - Environmental Consulting & Planning is in the process of conducting an environmental investigation and preparing an environmental report for East Kentucky Power Cooperative (EKPC) of Winchester, Kentucky to assess the environmental impacts associated with a proposed new electric transmission line in Warren County, Kentucky. The environmental report will be submitted to the USDA, Rural Utilities Service for its independent review and evaluation.

In addition to informing your agency of EKPC's plans, we are soliciting your advice and comments pertaining to the proposed new transmission line as it relates to threatened and endangered species. Any written comments received by your agency will be incorporated into the subject environmental investigation and report. A concise description of the proposed electric line and copies of portions of USGS topographic maps locating the proposed new facility are enclosed for your agency's review.

To avoid unnecessary delays in the planning and construction of the proposed project, we would appreciate receiving your written comments within 30 days. Should you have any questions or need additional information pertaining to the proposed project, please do not hesitate to contact me at the mailing address, e-mail address or telephone number given above.

Sincerely,

Gary W. Gilpin
Environmental Scientist/Owner

cc: Joe Settles, EKPC
Enclosures

1983-2005
22
YEARS OF SERVICE

KENTUCKY COMMERCE CABINET
DEPARTMENT OF FISH & WILDLIFE RESOURCES

Ernie Fletcher
Governor

#1 Game Farm Road
Frankfort, Kentucky 40601
Phone (502) 564-3400
(800) 858-1549
Fax (502) 564-0506
www.kentucky.gov

W. James Host
Secretary

Dr. Jonathan W. Gassett
Commissioner

September 26, 2005

Gary W. Gilpin
Gilpin Group
Environmental Consulting and Planning
2087 Ketchner Road
Wellsville, New York 14895

RE: Threatened/endangered species, critical habitat review, and potential environmental impacts associated with a proposed new electric transmission line located in Warren County, Kentucky.

Dear Mr. Gilpin:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has received your request for the above-referenced information. The Kentucky Fish and Wildlife Information System (KFWIS) indicate that federal/state threatened and endangered species are known to occur within the project area (see attached list). Please be aware that our database system is a dynamic one that only represents our current knowledge of the various species distributions.

Based on this information, KDFWR makes the following recommendations:

- The Indiana bat utilizes a wide array of habitats, including riparian forests, upland forest, and fencerows for both summer foraging and roosting habitat. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (i.e., dead trees or dead portions of live trees). Trees in excess of 16 inches diameter at breast height (DBH) are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Male Indiana bats have been observed roosting in trees as small as 3 inches DBH. Removal of suitable Indiana bat roost trees due to construction of the proposed project should be completed between October 15 and March 31 in order to avoid impacting summer roosting Indiana bats. However, if any Indiana bat hibernacula are identified on the project area or are known to occur within 10 miles of the project area, we recommend the applicant only remove trees between November 15 and March 31 in order to avoid impacting Indiana bat "swarming" behavior.
- Several federal and state listed mussel records occur within close proximity to the project area. Erosion control measures should be developed and utilized to insure that siltation is kept to a minimum during construction.
- To minimize impacts to mussels and bat foraging areas strict erosion control measures should be developed and implemented prior to construction to minimize siltation into karst areas located within the project area. Such erosion control measures may include, but are not limited to silt fences, staked straw bales, brush barriers, sediment basins, and diversion ditches. Erosion control measures will need to be installed prior to construction and should be inspected and repaired regularly as needed.

For more information on how to proceed with the threatened/endangered species surveys please contact the US Fish and Wildlife Service Kentucky Field Office at (502) 695-0468 or this office at (502) 564-7109 Extension 366.

I hope this information proves helpful to you. If you have any questions or require additional information, please call me at (502) 564-7109 Extension 366.

Sincerely,

Doug Dawson

Doug Dawson
Wildlife Biologist III

Attachments

Cc: Environmental Section File

Federal/State Listed Species that may be impacted by the proposed project.

Scientific Name	Common Name	Federal Status	KSNPC Status
Alasmidonta marginata	ELKTOE	N	T
Ardea alba	GREAT EGRET	N	E
Asio otus	LONG-EARED OWL	N	E
Corynorhinus rafinesquii	RAFINESQUE'S BIG-EARED BAT	N	S
Cryptobranchus alleganiensis alleganiensis	EASTERN HELLBENDER	N	S
Cumberlandia monodonta	SPECTACLECASE	N	E
Cyprogenia stegaria	FANSHELL	LE	E
Epioblasma obliquata obliquata	CATSPAW	LE	E
Epioblasma torulosa rangiana	NORTHERN RIFFLESHELL	LE	E
Epioblasma triquetra	SNUFFBOX	N	E
Etheostoma maculatum	SPOTTED DARTER	N	T
Fusconaia subrotunda	LONGSOLID	N	S
Gallinula chloropus	COMMON MOORHEN	C	T
Lampetra appendix	AMERICAN BROOK LAMPREY	N	T
Lampsilis abrupta	PINK MUCKET	LE	E
Lampsilis ovata	POCKETBOOK	N	E
Lophodytes cucullatus	HOODED MERGANSER	N	T
Myotis grisescens	GRAY MYOTIS	LE	T
Myotis sodalis	INDIANA BAT	LE	E
Noturus exilis	SLENDER MADTOM	N	E
Nyctanassa violacea	YELLOW-CROWNED NIGHT-HERON	N	T
Percina macrocephala	LONGHEAD DARTER	N	E
Phenacobius uranops	STARGAZING MINNOW	N	S
Plethobasus cyphyus	SHEEPNOSE	N	E
Pleurobema clava	CLUBSHELL	LE	E
Pleurobema plenum	ROUGH PIGTOE	LE	E
Pleurobema rubrum	PYRAMID PIGTOE	N	E
Podilymbus podiceps	PIED-BILLED GREBE	N	E
Quadrula cylindrica cylindrica	RABBITSFOOT	N	T
Simpsonaias ambigua	SALAMANDER MUSSEL	N	T
Typhlichthys subterraneus	SOUTHERN CAVEFISH	N	S
Villosa lienosa	LITTLE SPECTACLECASE	N	S
Villosa ortmanni	KENTUCKY CREEKSHELL	N	T

US Fish & Wildlife Service Status:
N = None
C = Candidate
LT = Listed as Threatened
LE = Listed as Endangered

KY State Nature Preserves Commission Status:
N = None
E = Endangered
T = Threatened
S = Special Concern
H = Historic
X = Extirpated

GILPIN GROUP
Environmental Consulting and Planning

2087 Ketchner Road
Wellsville, New York 14895
Phone: (585) 593-5696
E-mail: Gilpin@eznet.net

April 26, 2006

Doug Dawson, Wildlife Biologist III
Kentucky Department of Fish & Wildlife Resources
Arnold L. Mitchell Building
#1 Game Farm Road
Frankfort, Kentucky 40601

Dear Mr. Dawson:

Thank you for taking the time during our telephone conversation today to discuss the proposed alignment change to East Kentucky Power Cooperative's proposed GM - Memphis Junction Transmission Line that your office reviewed and commented on September 26, 2005. The proposed alignment change would involve the realignment of a 2.27 mile section of the proposed transmission line route in Warren County, Kentucky along the southern end of the route due to the requests of landowners in the area. This alignment change would be 2.90 miles in length (See enclosed map).

After discussing the proposed alignment change, you determined that your agency's original comments regarding the proposed electric transmission project would not change as a result of the proposed realignment. Should you have any additional concerns after you have reviewed the enclosed map, please do not hesitate to contact me at the mailing address, e-mail address, or telephone number given above.

Sincerely,

Gary W. Gilpin
Environmental Scientist/Owner

cc: Joe Settles, EKPC
Enclosure

1983-2006

23

YEARS OF SERVICE

GILPIN GROUP
Environmental Consulting and Planning

RECORD OF CONVERSATION

Project/Work Order: EKPC

Copy: GM to Memphis Jct. Trans. Line

[X] Telephone [ ] Meeting [ ] Other

To: Randall Payne From: Gary Gilpin

Company: KY. Dept. of Environ. Protection Phone No: (502) 564-3410 ext. 497 Date: 10/14/05

Subject: Outstanding Resource Waters exceptional and Special Waters

Summary of Conversation:

Barren River - Outstanding State Resource Water from the mouth of the Barren River at the Green River for a distance of 15 miles. Bowling Green area of river not in designated area.

Jennings Creek has no special water classifications.

GILPIN GROUP
Environmental Consulting and Planning

September 1, 2005

2087 Ketchner Road
Wellsville, New York 14895
Phone: (585) 593-5696
E-mail: Gilpin@eznet.net

Donald McCallon
District Conservationist
U.S. Natural Conservation Service
925 Lovers Lane
Bowling Green, Kentucky 42103

Dear Mr. McCallon:

GILPIN GROUP – Environmental Consulting & Planning is in the process of conducting an environmental investigation and preparing an environmental report for East Kentucky Power Cooperative (EKPC) of Winchester, Kentucky to assess the environmental impacts associated with a proposed new electric transmission line in Warren County, Kentucky. The environmental report will be submitted to the USDA, Rural Utilities Service for its independent review and evaluation.

In addition to informing your agency of EKPC's plans, we are soliciting your advice and comments pertaining to the proposed new transmission line as it relates to prime and important farmland soils. Any written comments received by your agency will be incorporated into the subject environmental investigation and report. A concise description of the proposed electric line and copies of portions of USGS topographic maps locating the proposed new facility are enclosed for your agency's review.

To avoid unnecessary delays in the planning and construction of the proposed project, we would appreciate receiving your written comments within 30 days. Should you have any questions or need additional information pertaining to the proposed project, please do not hesitate to contact me at the mailing address, e-mail address or telephone number given above.

Sincerely,

Gary W. Gilpin
Environmental Scientist/Owner

cc: Joe Settles, EKPC
Enclosures

1983-2005

22

YEARS OF SERVICE

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
925 Lovers Lane Ste. 300
Bowling Green, KY 42103
Phone (270) 843-1112

September 13, 2005

Gary Gilpin
Environmental Scientist/Owner
Gilpin Group
2087 Ketchner Road
Wellsville, New York 14895

Subject: EKPC Warren County Project

Dear Mr. Gilpin:

This is in response to the proposed construction of new and existing electrical lines of Eastern Kentucky Power Company. Approximately 25 to 30 percent of the of the new proposed transmission line rows of the 5.17 miles and approximately 40 to 45 percent of the new paralleling existing line rows of 2.17 miles consist of prime and important farmlands. The other rebuild lines would not affect prime or important farmland if using the same existing rows.

As indicated in the construction and maintenance procedures best management practices should be followed to control soil erosion during and after construction. Erosion control measures should be applied during construction as soon as possible to minimize soil erosion.

If you have any questions, please give me a call.

Sincerely,

Don McCallon

Don Mccallon
District Conservationist

GILPIN GROUP
Environmental Consulting and Planning

May 17, 2006

2087 Ketchner Road
Wellsville, New York 14895
Phone: (585) 593-5696
E-mail: Gilpin@eznet.net

Donald McCallon
District Conservationist
U.S. Natural Conservation Service
925 Lovers Lane
Bowling Green, Kentucky 42103

Dear Mr. McCallon:

Thank you for taking the time during our telephone conversation today to discuss the proposed alignment change to East Kentucky Power Cooperative's proposed GM - Memphis Junction Transmission Line that your office reviewed and commented on September 26, 2005. The proposed alignment change would involve the realignment of a 2.27 mile section of the proposed transmission line route in Warren County, Kentucky along the southern end of the route due to the requests of landowners in the area. This alignment change would be 2.90 miles in length (See enclosed map).

After discussing the proposed alignment change, you determined that this change in the proposed electric transmission route would not result any significant change in the proposed project's effect on prime and important farmland soils. Should you have any additional concerns after you have reviewed the enclosed map, please do not hesitate to contact me at the mailing address, e-mail address, or telephone number given above.

Sincerely,

Gary W. Gilpin
Environmental Scientist/Owner

cc: Joe Settles, EKPC
Enclosures

1983-2006
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YEARS OF SERVICE

320j7.

EAST KENTUCKY POWER COOPERATIVE

December 7, 2005

Mr. David Morgan
Kentucky Heritage Council
300 Washington Street
Frankfort, Kentucky 40601

Dear David,

I appreciate Dave Pollack and Janie Rice Brothers for taking the time to look at the maps for some of our projects this morning. We looked at maps from the following projects:

Gap of the Ridge
Smith–Sideview
Barren-Oakland-Magna
GM-Memphis Junction

After looking at the maps, it was my understanding that the Smith -Sideview and Gap of the Ridge projects will not have any impacts on archaeological, cultural or historical resources.

Upon reviewing the Barren-Oakland-Magna project maps, Dave and Janie Rice made the following recommendations for the following structures:

BN 220, BN 214, BN 211, BN 210

- these structures need to be evaluated relative to the line location, a determination of eligibility should be made, photographs of the structures should be taken, and forms for these structures need to be updated.
- The general area surrounding this portion of project area should be evaluated

For the GM – Memphis Junction project the same recommendations as above were made for structures:

WA 135, WA 132, WA 131, WA 325, and WA 318.

I appreciate your attention in these matters. Please contact me as soon as possible if Dave and Janie Rice do not agree with my assessment of today's meeting. We will work to fulfill the above recommendations for the two projects.

Sincerely,

Joe Settles
Supervisor, Natural Resources and Environmental Communications

4775 Lexington Road 40391
P.O. Box 707, Winchester,
Kentucky 40392-0707

Tel. (859) 744-4812
Fax: (859) 744-6008
http://www.ekpc.com

A Touchstone Energy Cooperative

GILPIN GROUP
Environmental Consulting and Planning

2087 Ketchner Road
Wellsville, New York 14895
Phone: (585) 593-5696
E-mail: Gilpin@eznet.net

April 10, 2006

David L. Morgan
Director and State Historic Preservation Officer
Kentucky Heritage Council
The State Historic Preservation Office
300 Washington Street
Frankfort, Kentucky 40601

Dear Mr. Morgan:

East Kentucky Power Cooperative (EKPC) of Winchester, Kentucky is proposing the following changes to the proposed GM - Memphis Junction Transmission Line that was review by your agency late last fall:

- Realignment of a 2.27 mile section of the proposed transmission line route in Warren County, Kentucky along the southern end of the route due to the requests of landowners in the area. This alignment change would be 2.90 miles in length (See enclosed map).

In addition to informing your agency of the proposed project change, we are soliciting your advice and comments pertaining to the proposed change as it relates to properties of historic and archaeological significance currently listed in, or eligible for inclusion in the *National Register of Historic Places*; and any other areas of specific cultural resource concern. Any written comments received by your agency will be incorporated into the subject environmental investigation and report.

To avoid unnecessary delays in the planning and construction of the proposed project, we would appreciate receiving your written comments within 30 days. Should you have any questions or need additional information pertaining to the proposed project, please do not hesitate to contact me at the mailing address, e-mail address or telephone number given above.

Sincerely,

Gary W. Gilpin
Environmental Scientist/Owner

cc: Joe Settles, EKPC
Enclosures

1983-2006
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COMMERCE CABINET
KENTUCKY HERITAGE COUNCIL

Ernie Fletcher
Governor

The State Historic Preservation Office
300 Washington Street
Frankfort, Kentucky 40601
Phone (502) 564-7005
Fax (502) 564-5820
www.kentucky.gov

George Ward
~~W. James Host~~
Secretary

David L. Morgan
Executive Director and
State Historic Preservation Officer

April 19, 2006

Mr. Gary W. Gilpin
Environmental Scientist/Owner
Gilpin Group
2087 Ketchner Road
Wellsville, New York 14895

Dear Mr. Gilpin:

Thank you for your revised letter dated April 10, 2006 concerning East Kentucky Power Cooperative's modifications to the proposed GM- Memphis Junction Transmission Line in Warren County, Kentucky. The changes include realigning a 2.27-mile long section of the transmission line route. A review of our files indicates that no archaeological sites are recorded within the 2.9-mile long transmission line route. Since the proposed transmission line will be supported by hollow metal poles set with augers, and the right-of-way will be cleared without disturbing the ground, an archaeological survey will not be necessary for the new transmission line route.

Our review indicates that the proposed realignment of the power line route is adjacent to the Joseph Price Perkins House (WA 135), which has not been assessed. The proposed line is also near the Gaddish-Asher House (WA 132) which has been determined eligible for listing in the National Register of Historic Places. The proposed power line may have an Adverse Effect on these properties. We recommend that East Kentucky Power Cooperative hire a historic consultant to conduct a literature search and evaluate potential visual effects from the power line to WA 132 and WA 135 and any other historic properties within or near the proposed corridor. The consultant should examine a corridor one mile wide, one half a mile wide on both sides of the route. The historic report must be submitted for my review, comment, and approval.

Should you have any questions, feel free to contact Charles Hockensmith of my staff at (502) 564-7005.

Sincerely,

David L. Morgan, Director
Kentucky Heritage Council and
State Historic Preservation Officer

EAST KENTUCKY POWER COOPERATIVE

March 1, 2006

John P. Froman, Chief
Peoria Indian Tribe of Oklahoma
P.O. Box 1527
Miami, OK 74355

John P. Froman, Chief;

RE: Proposed GM – Memphis Junction 161 kV Transmission Line Project

East Kentucky Power Cooperative proposes to construct a 161 kV transmission line in Warren County, Kentucky. The project is entitled GM-Memphis Junction. The proposed transmission line would be located in Warren County, KY and would be approximately 15.21 miles in length.

Because East Kentucky Power Cooperative plans to apply for financing assistance from the U.S. Department of Agriculture, Rural Utilities Service ("RUS"), the proposed project constitutes an undertaking subject to the requirements of Section 106 of the National Historic Preservation Act. In this case, RUS is utilizing the services of EKPC to prepare information, analyses and recommendations as part of the Section 106 review process. This correspondence is intended to provide you with a summary of the project and invite you to participate in the Section 106 process pursuant to your unique status as an Indian tribe, as recognized in the Section 106 regulations, 36 C.F.R. § 800.2(c)(2).

Construction of the new line would involve the rebuilding of a 5.17 mile section of existing double circuit 69 kV transmission line and a 3.39 mile section of existing single circuit 69 kV transmission line. The existing lines within these two sections would be dismantled and replaced by the proposed new transmission line. The proposed new line would be located on the existing 100 ft wide ROWs within these two sections and would not require any additional ROW width. The balance of the proposed new line would be new construction, 2.41 miles of which would parallel an existing electric transmission line. The remaining 4.24 miles would require a new 100 foot wide ROW, 50 feet of which would be shared with another proposed new electric transmission line. The ROW for the proposed transmission line would encompass approximately 184.4 acres of land, of which 118.4 acres would utilize existing ROWs.

The proposed line would begin at the East Bowling Green/ General Motors Substation northeast of Bowling Green and travel west along the northern edge of the city. It would then turn southwest after the Barren River crossings and extend to just east of Blue Level.

4775 Lexington Road 40391
P.O. Box 707, Winchester,
Kentucky 40392-0707
Tel. (859) 744-4812
Fax: (859) 744-6008
http://www.ekpc.coop

At this point, the line would travel south and end at the Memphis Junction Substation, located southwest of Memphis Junction.

In accordance with 36 CFR Part 800 and the National Historic Preservation Act of 1966, as amended, East Kentucky Power Cooperative, as agent for RUS, is soliciting the involvement of any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by the proposed project. To notify RUS and EKPC of your tribe's desire to become a consulting party for this project, please send a letter, complete with contact information and statement of interest, to Joe Settles at joe.settles@ekpc.coop or at East Kentucky Power Cooperative, 4775 Lexington Road, Winchester, KY 40391.

Thank you for your time and efforts in this matter.

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

Cc: Stephanie Strength (Rural Utilities Service)

PEORIA TRIBE OF INDIANS OF OKLAHOMA
118 S. Eight Tribes Trail (918) 540-2535 FAX (918) 540-2538
P.O. Box 1527
MIAMI, OKLAHOMA 74355

CHIEF
John P. Froman

SECOND CHIEF
Jason Dollarhide

March 8, 2006

East KY Power Cooperative
Attn: Joe Settles
PO Box 707
Winchester, KY 40392-0707

RE: Proposed GM – Memphis Junction 161 kV Transmission Line Project

Thank you for notice of the referenced project. The Peoria Tribe of Indians of Oklahoma is currently unaware of any documentation directly linking Indian Religious Sites to the proposed construction. In the event any items falling under the Native American Graves Protection and Repatriation Act (NAGPRA) are discovered during construction, the Peoria Tribe request notification and further consultation.

The Peoria Tribe has no objection to the proposed construction. However, if any human skeletal remains and/or any objects falling under NAGPRA are uncovered during construction, the construction should stop immediately, and the appropriate persons, including state and tribal NAGPRA representatives contacted.

John P. Froman
Chief

xc: Bud Ellis, Repatriation/NAGPRA Committee Chairman

EAST KENTUCKY POWER COOPERATIVE

March 1, 2006

Julie Olds, Cultural Preservationist
Miami Tribe of Oklahoma
P.O. Box 1326
Miami, OK 74355

Julie Olds, Cultural Preservationist;

RE: Proposed GM – Memphis Junction 161 kV Transmission Line Project

East Kentucky Power Cooperative proposes to construct a 161 kV transmission line in Warren County, Kentucky. The project is entitled GM-Memphis Junction. The proposed transmission line would be located in Warren County, KY and would be approximately 15.21 miles in length.

Because East Kentucky Power Cooperative plans to apply for financing assistance from the U.S. Department of Agriculture, Rural Utilities Service ("RUS"), the proposed project constitutes an undertaking subject to the requirements of Section 106 of the National Historic Preservation Act. In this case, RUS is utilizing the services of EKPC to prepare information, analyses and recommendations as part of the Section 106 review process. This correspondence is intended to provide you with a summary of the project and invite you to participate in the Section 106 process pursuant to your unique status as an Indian tribe, as recognized in the Section 106 regulations, 36 C.F.R. § 800.2(c)(2).

Construction of the new line would involve the rebuilding of a 5.17 mile section of existing double circuit 69 kV transmission line and a 3.39 mile section of existing single circuit 69 kV transmission line. The existing lines within these two sections would be dismantled and replaced by the proposed new transmission line. The proposed new line would be located on the existing 100 ft wide ROWs within these two sections and would not require any additional ROW width. The balance of the proposed new line would be new construction, 2.41 miles of which would parallel an existing electric transmission line. The remaining 4.24 miles would require a new 100 foot wide ROW, 50 feet of which would be shared with another proposed new electric transmission line. The ROW for the proposed transmission line would encompass approximately 184.4 acres of land, of which 118.4 acres would utilize existing ROWs.

The proposed line would begin at the East Bowling Green/ General Motors Substation northeast of Bowling Green and travel west along the northern edge of the city. It would then turn southwest after the Barren River crossings and extend to just east of Blue Level.

4775 Lexington Road 40391
P.O. Box 707, Winchester,
Kentucky 40392-0707

Tel. (859) 744-4812
Fax: (859) 744-6008
http://www.ekpc.coop

A Touchstone Energy Cooperative

At this point, the line would travel south and end at the Memphis Junction Substation, located southwest of Memphis Junction.

In accordance with 36 CFR Part 800 and the National Historic Preservation Act of 1966, as amended, East Kentucky Power Cooperative, as agent for RUS, is soliciting the involvement of any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by the proposed project. To notify RUS and EKPC of your tribe's desire to become a consulting party for this project, please send a letter, complete with contact information and statement of interest, to Joe Settles at joe.settles@ekpc.coop or at East Kentucky Power Cooperative, 4775 Lexington Road, Winchester, KY 40391.

Thank you for your time and efforts in this matter.

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

Cc: Stephanie Strength (Rural Utilities Service)

Miami Tribe of Oklahoma
P.O. Box 1326 Miami, Oklahoma 74355
Ph: (918) 542-1445 Fax (918) 542-7260

March 7, 2006

Joe Settles
East Kentucky Power Cooperative
P.O. Box 707
Winchester, Kentucky 40392-0707

**Re: Proposed GM – Memphis Junction 161 kV Transmission Line Project
Warren County, Kentucky &
Proposed Barren County-Oakland-Magna 161 kV Transmission Line Project**

Aya, kikwesitoole. My name is Julie Olds and I am the Cultural Preservation Officer for the Federally Recognized Miami Tribe of Oklahoma. In this capacity I am the Miami Nation's point of contact for all NAGPRA and Section 106 issues.

As Warren and Barren Counties, Kentucky are not counties within our aboriginal homelands, they are not a counties of concern or interest to the Miami Nation. No further notification or correspondence is required for projects within these counties.

Sincerely,

Julie L. Olds
Cultural Preservation Officer
Miami Nation

EAST KENTUCKY POWER COOPERATIVE

March 1, 2006

Dr. Richard Allen, THPO
Cherokee Nation
P.O. Box 948
Tahlequah, OK 74465

Dr. Richard Allen, THPO;

RE: Proposed GM – Memphis Junction 161 kV Transmission Line Project

East Kentucky Power Cooperative proposes to construct a 161 kV transmission line in Warren County, Kentucky. The project is entitled GM-Memphis Junction. The proposed transmission line would be located in Warren County, KY and would be approximately 15.21 miles in length.

Because East Kentucky Power Cooperative plans to apply for financing assistance from the U.S. Department of Agriculture, Rural Utilities Service ("RUS"), the proposed project constitutes an undertaking subject to the requirements of Section 106 of the National Historic Preservation Act. In this case, RUS is utilizing the services of EKPC to prepare information, analyses and recommendations as part of the Section 106 review process. This correspondence is intended to provide you with a summary of the project and invite you to participate in the Section 106 process pursuant to your unique status as an Indian tribe, as recognized in the Section 106 regulations, 36 C.F.R. § 800.2(c)(2).

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A Touchstone Energy Cooperative

At this point, the line would travel south and end at the Memphis Junction Substation, located southwest of Memphis Junction.

In accordance with 36 CFR Part 800 and the National Historic Preservation Act of 1966, as amended, East Kentucky Power Cooperative, as agent for RUS, is soliciting the involvement of any Indian tribe that attaches religious and cultural significance to historic properties that may be affected by the proposed project. To notify RUS and EKPC of your tribe's desire to become a consulting party for this project, please send a letter, complete with contact information and statement of interest, to Joe Settles at joe.settles@ekpc.coop or at East Kentucky Power Cooperative, 4775 Lexington Road, Winchester, KY 40391.

Thank you for your time and efforts in this matter.

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

Cc: Stephanie Strength (Rural Utilities Service)

EAST KENTUCKY POWER COOPERATIVE

March 1, 2006

Russell Townsend, THPO
Eastern Band of Cherokee Indians
Cultural Resources Division
P.O. Box 455
Cherokee, NC 28719

Russell Townsend, THPO;

RE: Proposed GM – Memphis Junction 161 kV Transmission Line Project

East Kentucky Power Cooperative proposes to construct a 161 kV transmission line in Warren County, Kentucky. The project is entitled GM-Memphis Junction. The proposed transmission line would be located in Warren County, KY and would be approximately 15.21 miles in length.

Because East Kentucky Power Cooperative plans to apply for financing assistance from the U.S. Department of Agriculture, Rural Utilities Service ("RUS"), the proposed project constitutes an undertaking subject to the requirements of Section 106 of the National Historic Preservation Act. In this case, RUS is utilizing the services of EKPC to prepare information, analyses and recommendations as part of the Section 106 review process. This correspondence is intended to provide you with a summary of the project and invite you to participate in the Section 106 process pursuant to your unique status as an Indian tribe, as recognized in the Section 106 regulations, 36 C.F.R. § 800.2(c)(2).

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A Touchstone Energy Cooperative

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Thank you for your time and efforts in this matter.

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

Cc: Stephanie Strength (Rural Utilities Service)

March 1, 2006

Lisa Stopp
Historic Preservation Coordinator
United Keetoowah Band of Cherokee Indians
P.O. Box 746
Tahlequah, OK 74465

Lisa Stopp;

RE: Proposed GM – Memphis Junction 161 kV Transmission Line Project

East Kentucky Power Cooperative proposes to construct a 161 kV transmission line in Warren County, Kentucky. The project is entitled GM-Memphis Junction. The proposed transmission line would be located in Warren County, KY and would be approximately 15.21 miles in length.

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Thank you for your time and efforts in this matter.

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

Cc: Stephanie Strength (Rural Utilities Service)

EAST KENTUCKY POWER COOPERATIVE

March 1, 2006

Rebecca Hawkins
Tribal Administrator
The Shawnee Tribe
P.O. Box 189
Miami, OK 74355

Rebecca Hawkins;

RE: Proposed GM – Memphis Junction 161 kV Transmission Line Project

East Kentucky Power Cooperative proposes to construct a 161 kV transmission line in Warren County, Kentucky. The project is entitled GM-Memphis Junction. The proposed transmission line would be located in Warren County, KY and would be approximately 15.21 miles in length.

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Thank you for your time and efforts in this matter.

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

Cc: Stephanie Strength (Rural Utilities Service)

EAST KENTUCKY POWER COOPERATIVE

March 1, 2006

Karen Kaniatobe, THPO
Cultural/Historic Preservation Department
Absentee Shawnee Tribe of Oklahoma
2025 S. Gordon Cooper Drive
Shawnee, OK 74801

Karen Kaniatobe, THPO;

RE: Proposed GM – Memphis Junction 161 kV Transmission Line Project

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Thank you for your time and efforts in this matter.

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

Cc: Stephanie Strength (Rural Utilities Service)

EAST KENTUCKY POWER COOPERATIVE

March 1, 2006

Roxanne Weldon, Director
Environmental/Land Management Department
Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, MO 64865

Roxanne Weldon, Director;

RE: Proposed GM – Memphis Junction 161 kV Transmission Line Project

East Kentucky Power Cooperative proposes to construct a 161 kV transmission line in Warren County, Kentucky. The project is entitled GM-Memphis Junction. The proposed transmission line would be located in Warren County, KY and would be approximately 15.21 miles in length.

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Thank you for your time and efforts in this matter.

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

Cc: Stephanie Strength (Rural Utilities Service)

EAST KENTUCKY POWER COOPERATIVE

March 1, 2006

Virginia Nail, THPO
Chickasaw Nation
P.O. Box 1548
Ada, OK 74821

Virginia Nail, THPO;

RE: Proposed GM – Memphis Junction 161 kV Transmission Line Project

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Thank you for your time and efforts in this matter.

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

Cc: Stephanie Strength (Rural Utilities Service)

EAST KENTUCKY POWER COOPERATIVE

March 1, 2006

Elaine Walker
Mayor of Bowling Green
City of Bowling Green
1001 College Street
Bowling Green, KY 42102-0430

Elaine Walker;

RE: Proposed GM – Memphis Junction 161 kV Transmission Line Project

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Because East Kentucky Power Cooperative plans to apply for project financing assistance from the U.S. Department of Agriculture, Rural Utilities Service ("RUS"), the proposed project constitutes an undertaking subject to review under Section 106 of the National Historic Preservation Act. As the head of a local government in the area that will be affected by the project, and in accordance with 36 CFR Part 800 and the National Historic Preservation Act of 1966, as amended, you or your representative is entitled to

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participate in the Section 106 review process as a consulting party. If you desire to become formally involved in the regulatory process as a consulting party, please send an email or letter to Joe Settles at joe.settles@ekpc.coop or at East Kentucky Power Cooperative, 4775 Lexington Road, Winchester, KY 40391.

Thank you for your time and efforts in this matter.

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

Cc: Stephanie Strength (Rural Utilities Service)

Joe Settles

From: Elaine Walker [Elaine.Walker@bgky.org]
Sent: Friday, March 17, 2006 4:41 PM
To: Joe Settles
Cc: Robin Zeigler
Subject: Proposed GM-Memphis Junction Project

Elaine Walker.vc ATT53267.txt

Mr. Settles,
Thank you for your letter regarding this project. With regard to Section 106 Review, our designated party would be Robin Zeigler who is our Historic Preservation Officer. She can be reached at (270) 842-1953 or via email at Robin.Zeigler@bgky.org.
Elaine Walker

Elaine N. Walker
Mayor of Bowling Green
Elaine.Walker@bgky.org

March 1, 2006

Michael Buchanon
Warren County Judge Executive
429 E Tenth Street, 2nd Floor
Bowling Green, KY 42101

Michael Buchanon;

RE: Proposed GM – Memphis Junction 161 kV Transmission Line Project

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Thank you for your time and efforts in this matter.

Sincerely,

Joe Settles
Supervisor, Natural Resources
And Environmental Communications

Cc: Stephanie Strength (Rural Utilities Service)

APPENDIX D
EPRI SITING METHODOLOGY RESULTS

The EPRI Overhead Electric Transmission Line Siting Methodology Results

For

East Kentucky Power Cooperative's

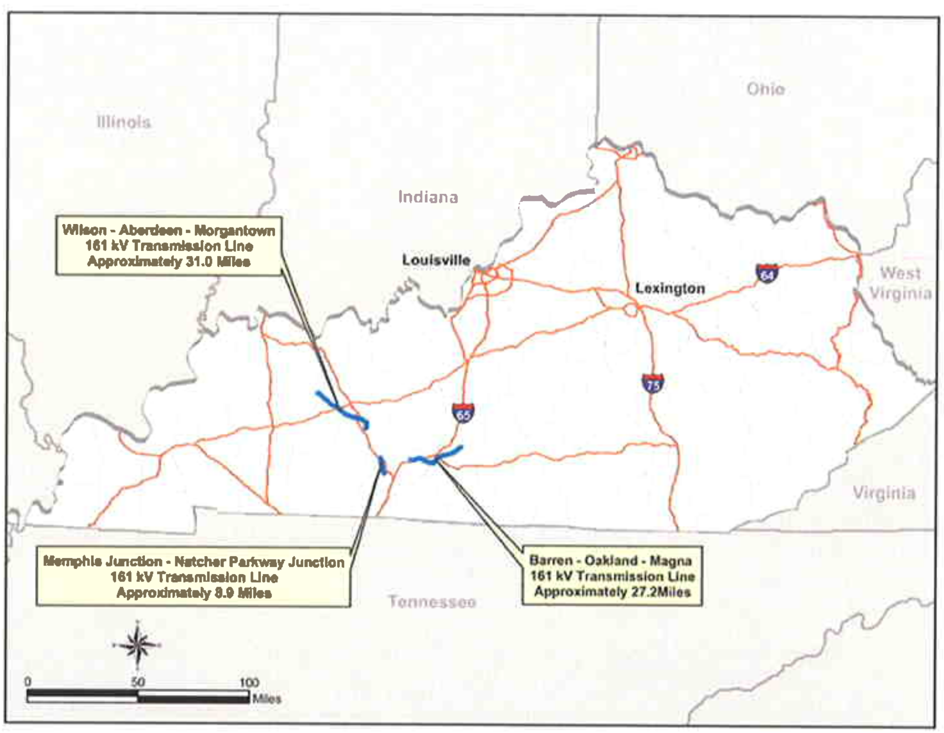
Memphis Junction – Natcher Parkway Junction
161 kV Transmission Line

Barren - Oakland – Magna
161 kV Transmission Line

and

Wilson – Aberdeen - Morgantown
161 kV Transmission Line

Projects



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1. Introduction:

The EPRI Overhead Electric Transmission Line Siting Methodology was used for these projects using the calibrated weights and values determined by external stakeholders (including government agencies, NGO's, community groups, other utilities, etc…) and Georgia Transmission Corporation. This document reports the results of this process. Any departure from the methodology or weights and values is documented, and the reason for deviation is explained in this report. Details concerning the siting methodology can be found in the document entitled "EPRI – GTC Project Report: Standardized Methodology for Siting Overhead Electric Transmission Lines".

2. Memphis Junction – Natcher Parkway Junction

2.1. Macro Corridors:

The first step in this methodology is Macro Corridor creation, which defines an area for more detailed study. Typically for this stage, the best available land cover dataset based on 30m LandSat imagery is used. In the case of this area, the best available is from 1992. After evaluating the Macro Corridor results, it was determined that areas east of the William H. Natcher Parkway were too congested in relation to the remainder of the macro corridor area as a result of field analysis by the routing team. The 1992 land cover didn't reflect the recent urbanization of this area. Therefore this area was excluded for further siting examination.

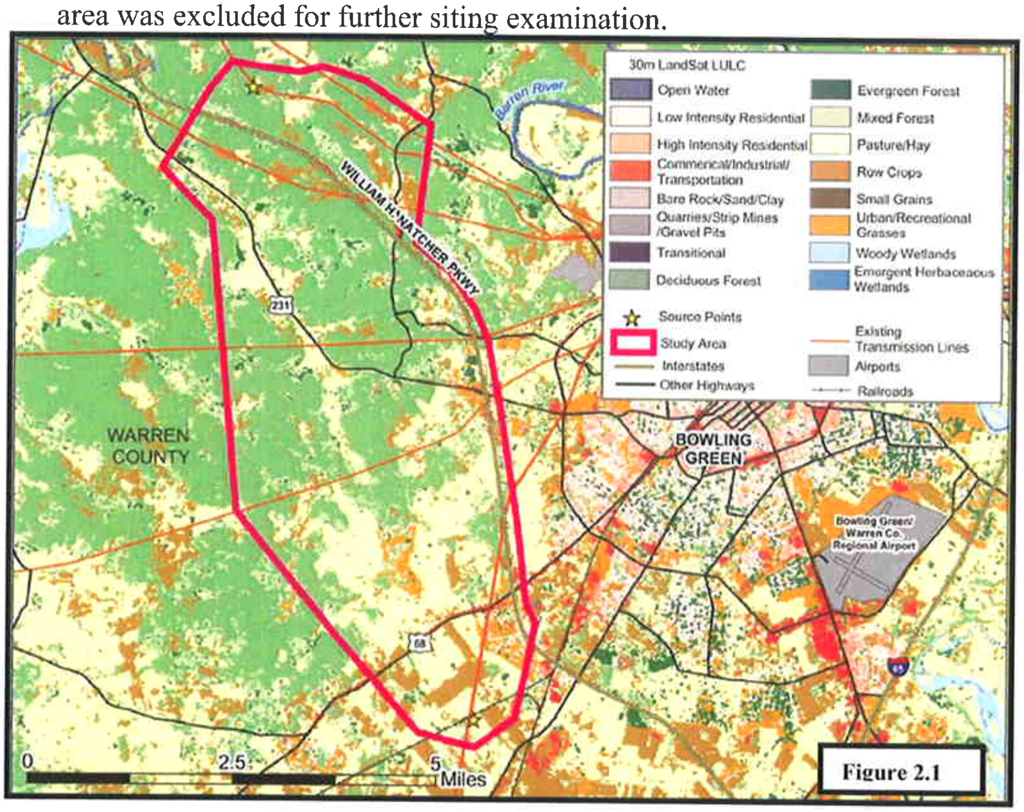


Figure 2.1

The resulting area is approx. 23 sq miles to the west of Bowling Green. The land use is a mix of suburban residential, rural residential, agriculture, and forests with some commercial and industrial. The urbanized areas exist primarily on the east side near the parkway with the west side being more rural.

2.2. Alternative Corridors:

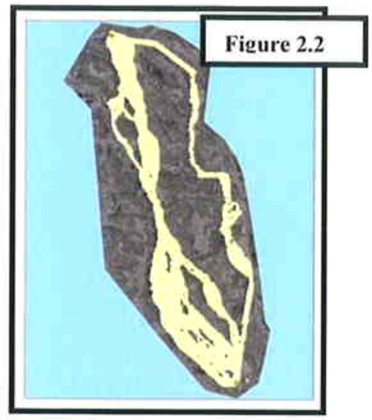


Figure 2.2

Once the Macro Corridors are identified, detailed datasets are developed for siting purposes. Weight and values are assigned to the datasets and alterative corridors are generated. In the Alternative Corridor phase, there were no deviations from the EPRI methodology or changes to the standardized weights and values.

2.2.1. Built Environment Corridor:

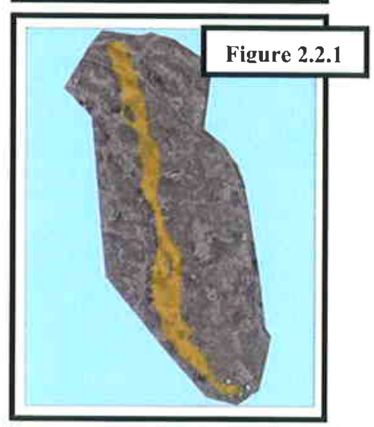


Figure 2.2.1

The Built Environment Corridor leaves the southern substation in a northwestern direction, avoiding proposed and existing developments. After approx. 2 miles, the corridor heads in a more northerly direction, crossing primarily agricultural and forested land use with some rural residential areas.

2.2.2. Natural Environment Corridor:

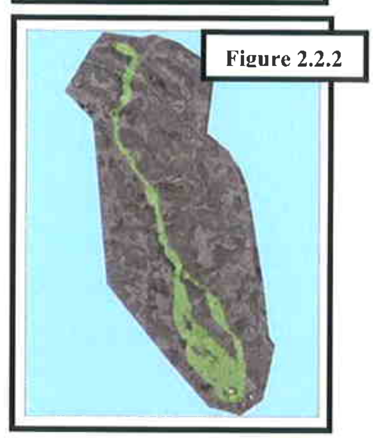


Figure 2.2.2

The Natural Environment Corridor also leaves the southern substation in a northwestern direction in several paths. However, this corridor is a greater impact to proposed and exiting developments in the area. It targets an agricultural area (avoiding forested areas on either side) until co-locating with US Highway 231. The corridor leaves US Highway 231 after approx. 2.0 miles at Price Chapel Road, follows Price Chapel Road for approx. 0.5 miles, and heads cross country in a northern direction for approx. 1.2 miles. Approx. 0.4 miles from the destination, the corridor co-locates with an existing transmission line to the end.

2.2.3. Engineering Concerns Corridor:

Figure 2.2.3

The Engineering Corridor heads out of the southern substation in a1 north northeast direction, co-locating with an existing transmission line. The existing transmission line crosses through residential neighborhoods in this area. After 2.4 miles, it leaves the existing transmission line, heads cross country for approx. 0.7 miles, and co-locates with an existing gas pipeline. The corridor leaves the gas pipeline after 1.75 miles and co-locates with another existing transmission line for approx. 0.5 miles. At this point, it co-locates with Glen Lily Road for approx. 2.4 miles. The last 2 miles of the corridor are co-located with another transmission line to the destination point. The land use of most of this route is urban, becoming densely residential in some points with the exception of the last two miles, which mainly is forested and agricultural.

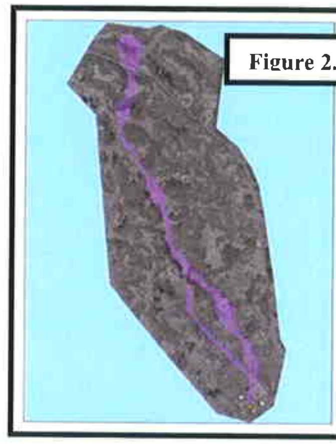


Figure 2.2.4

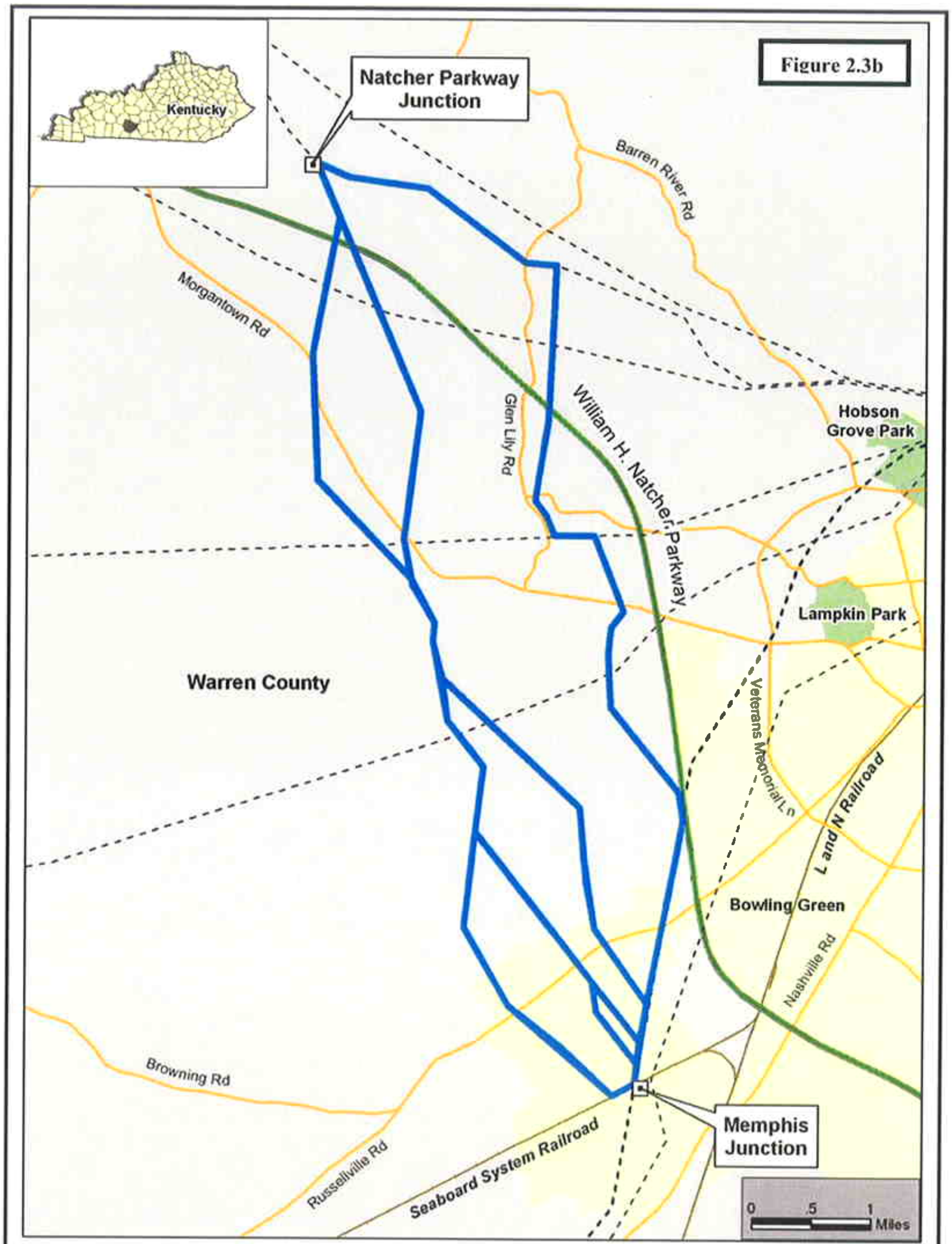
2.2.4. Averaged Corridor:

The Average Corridor mostly mimics the Natural Environment Corridor, with fewer paths from the southern substation.

2.3. Alternate Routes:

The siting team analyzed the alternate corridors and identified alternate routes within the alternate corridors. These alternate routes were compared using the route selection matrix documented in the siting methodology.

Figure 2.3a



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2.4. Alternative Route Evaluation

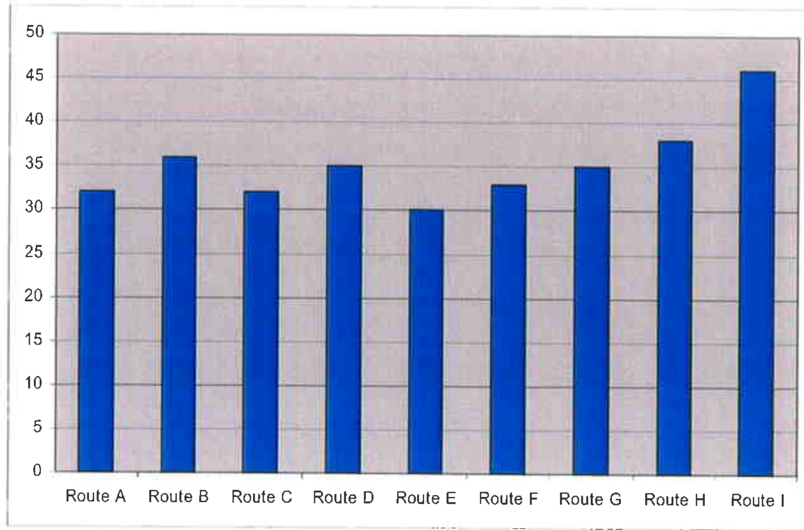
Raw Statistics and Normalized Statistics

Figure 2.4a

Built	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I
Feature	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 100' Corridor	0	0	0	0	0	0	0	0	0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proximity to Residences (300')	9	4	13	8	13	8	11	6	36
Normalized	0.2	0.0	0.3	0.1	0.3	0.1	0.2	0.1	1.0
Proposed Developments	0	0	0	0	0	0	0	0	0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proximity to Commercial Buildings (300')	0	0	0	0	0	0	1	1	0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0
Proximity to Industrial Buildings (300')	2	2	1	1	1	1	1	1	6
Normalized	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.0
School, DayCare, Church, Cemetery, Park	0	0	0	0	0	0	0	0	3
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0	0	0	0	0	0	0	0	0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural									
Natural Forests (Acres)	21.9	34.4	23.1	35.4	23.1	35.6	31.8	44.1	17.1
Normalized	0.2	0.6	0.2	0.7	0.2	0.7	0.5	1.0	0.0
Stream/River Crossings	7	7	7	7	7	7	8	8	4
Normalized	0.8	0.8	0.8	0.8	0.8	0.8	1.0	1.0	0.0
Wetland Areas (Acres)	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.3	0.5
Normalized	0.2	0.3	0.0	0.0	0.0	0.0	0.6	0.3	1.0
Floodplain Areas (Acres)	7.2	0.6	7.2	0.6	7.2	0.6	7.2	0.6	0.0
Normalized	1.0	0.1	1.0	0.1	1.0	0.1	1.0	0.1	0.0
Engineering									
Length (Miles)	9.1	8.9	8.7	8.5	8.7	8.5	8.8	8.6	9.8
Normalized	0.4	0.3	0.1	0.0	0.2	0.0	0.2	0.1	1.0
Miles of Rebuild with Existing T/L*	0.2	0.2	0.2	0.2	0.4	0.4	0.7	0.7	4.8
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.0
Inverted	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.0
Miles of Co-location with Existing Utility*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Inverted	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Miles of Co-location with Roads*	0.0	0.0	0.5	0.5	0.0	0.0	0.1	0.1	0.0
Normalized	0.0	0.0	1.0	1.0	0.0	0.0	0.2	0.2	0.0
Inverted	1.0	1.0	0.0	0.0	1.0	1.0	0.8	0.8	1.0
Number of Parcels	32	36	32	35	30	33	35	38	46
Normalized	0.1	0.4	0.1	0.3	0.0	0.2	0.3	0.5	1.0
Total Project Costs	$2,883,321	$2,613,320	$2,320,009	$2,248,083	$2,369,703	$2,337,277	$3,347,566	$3,324,679	$3,479,628
Normalized	0.5	0.3	0.1	0.0	0.1	0.1	0.9	0.9	1.0

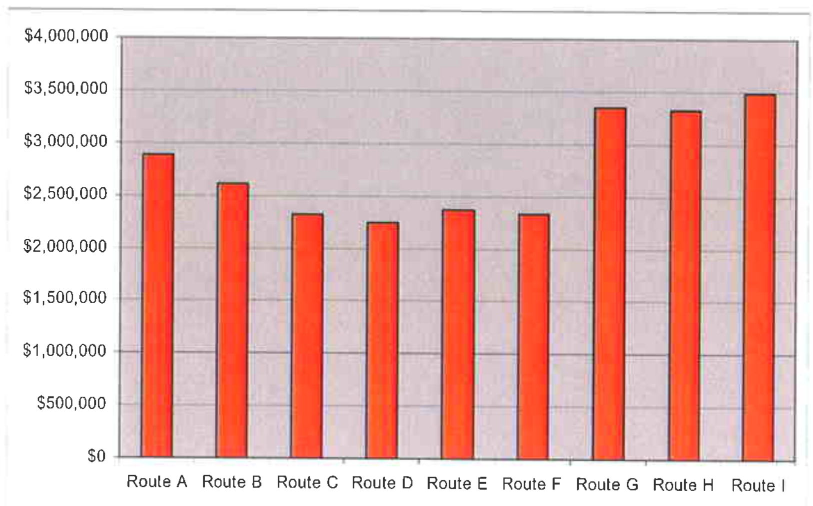
Number of Parcels Crossed

Figure 2.4b



Comparative Costs

Figure 2.4c



Alternative Route Selection Matrix
Emphasis on Built Environment

Figure 2.4d

Built	72%	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I
Feature		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 75' Corridor)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	32.6%	0.16	0.00	0.28	0.13	0.28	0.13	0.22	0.06	1.00
Weighted		0.05	0.00	0.09	0.04	0.09	0.04	0.07	0.02	0.33
Proposed Residential Developments	13.4%	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Weighted		0.00	0.00	0.13	0.13	0.13	0.13	0.13	0.13	0.00
Proximity to Commercial Buildings (300')	9.0%	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09	0.00
Proximity to Industrial Buildings (300')	4.5%	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Weighted		0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05
School, DayCare, Church, Cemetery, Park	40.5%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.06	0.01	0.23	0.17	0.23	0.17	0.30	0.24	0.78
WEIGHTED TOTAL		0.04	0.01	0.16	0.13	0.16	0.13	0.21	0.18	0.56
Natural	14%									
Natural Forests (Acres)	9.3%	0.18	0.64	0.22	0.68	0.22	0.68	0.54	1.00	0.00
Weighted		0.02	0.06	0.02	0.06	0.02	0.06	0.05	0.09	0.00
Stream/River Crossings	38.0%	0.75	0.75	0.75	0.75	0.75	0.75	1.00	1.00	0.00
Weighted		0.29	0.29	0.29	0.29	0.29	0.29	0.38	0.38	0.00
Wetland Areas (Acres)	40.3%	0.23	0.26	0.00	0.04	0.02	0.00	0.62	0.31	1.00
Weighted		0.09	0.11	0.00	0.02	0.01	0.00	0.25	0.12	0.40
Floodplain Areas (Acres)	12.4%	1.00	0.09	1.00	0.09	1.00	0.09	1.00	0.09	0.00
Weighted		0.12	0.01	0.12	0.01	0.12	0.01	0.12	0.01	0.00
TOTAL	100.0%	0.52	0.46	0.43	0.37	0.44	0.36	0.80	0.61	0.40
WEIGHTED TOTAL		0.07	0.06	0.06	0.05	0.06	0.05	0.11	0.09	0.06
Engineering	14%									
Miles of Rebuild with Existing T/L*	65.6%	1.00	1.00	1.00	1.00	0.96	0.96	0.89	0.89	0.00
Weighted		0.66	0.66	0.66	0.66	0.63	0.63	0.58	0.58	0.00
Miles of Co-location with Existing T/L*	19.2%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Weighted		0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.00
Miles of Co-location with Roads*	7.8%	1.00	1.00	0.00	0.00	1.00	1.00	0.80	0.80	1.00
Weighted		0.08	0.08	0.00	0.00	0.08	0.08	0.06	0.06	0.08
Total Project Costs	7.4%	0.52	0.30	0.06	0.00	0.10	0.07	0.89	0.87	1.00
Weighted		0.04	0.02	0.00	0.00	0.01	0.01	0.07	0.06	0.07
TOTAL	100.0%	0.96	0.95	0.85	0.85	0.90	0.90	0.91	0.90	0.15
WEIGHTED TOTAL		0.13	0.13	0.12	0.12	0.13	0.13	0.13	0.13	0.02
SUM OF WEIGHTED TOTALS		0.25	0.20	0.34	0.30	0.35	0.30	0.45	0.39	0.64
RANK		2	1	5	3	6	4	8	7	9

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Alternative Route Selection Matrix
Emphasis on Engineering Concerns

Figure 2.4e

Built	14%	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I
Feature		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 75' Corridor)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	32.6%	0.16	0.00	0.28	0.13	0.28	0.13	0.22	0.06	1.00
Weighted		0.05	0.00	0.09	0.04	0.09	0.04	0.07	0.02	0.33
Proposed Residential Developments	13.4%	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Weighted		0.00	0.00	0.13	0.13	0.13	0.13	0.13	0.13	0.00
Proximity to Commercial Buildings (300')	9.0%	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09	0.00
Proximity to Industrial Buildings (300')	4.5%	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Weighted		0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05
School, DayCare, Church, Cemetery, Park	40.5%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.06	0.01	0.23	0.17	0.23	0.17	0.30	0.24	0.78
WEIGHTED TOTAL		0.01	0.00	0.03	0.02	0.03	0.02	0.04	0.03	0.11
Natural	14%									
Natural Forests (Acres)	9.3%	0.18	0.64	0.22	0.68	0.22	0.68	0.54	1.00	0.00
Weighted		0.02	0.06	0.02	0.06	0.02	0.06	0.05	0.09	0.00
Stream/River Crossings	38.0%	0.75	0.75	0.75	0.75	0.75	0.75	1.00	1.00	0.00
Weighted		0.29	0.29	0.29	0.29	0.29	0.29	0.38	0.38	0.00
Wetland Areas (Acres)	40.3%	0.23	0.26	0.00	0.04	0.02	0.00	0.62	0.31	1.00
Weighted		0.09	0.11	0.00	0.02	0.01	0.00	0.25	0.12	0.40
Floodplain Areas (Acres)	12.4%	1.00	0.09	1.00	0.09	1.00	0.09	1.00	0.09	0.00
Weighted		0.12	0.01	0.12	0.01	0.12	0.01	0.12	0.01	0.00
TOTAL	100.0%	0.52	0.46	0.43	0.37	0.44	0.36	0.80	0.61	0.40
WEIGHTED TOTAL		0.07	0.06	0.06	0.05	0.06	0.05	0.11	0.09	0.06
Engineering	72%									
Miles of Rebuild with Existing T/L*	65.6%	1.00	1.00	1.00	1.00	0.96	0.96	0.89	0.89	0.00
Weighted		0.66	0.66	0.66	0.66	0.63	0.63	0.58	0.58	0.00
Miles of Co-location with Existing T/L*	19.2%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Weighted		0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.00
Miles of Co-location with Roads*	7.8%	1.00	1.00	0.00	0.00	1.00	1.00	0.80	0.80	1.00
Weighted		0.08	0.08	0.00	0.00	0.08	0.08	0.06	0.06	0.08
Total Project Costs	7.4%	0.52	0.30	0.06	0.00	0.10	0.07	0.89	0.87	1.00
Weighted		0.04	0.02	0.00	0.00	0.01	0.01	0.07	0.06	0.07
TOTAL	100.0%	0.96	0.95	0.85	0.85	0.90	0.90	0.91	0.90	0.15
WEIGHTED TOTAL		0.69	0.68	0.61	0.61	0.65	0.65	0.65	0.65	0.11
SUM OF WEIGHTED TOTALS		0.78	0.75	0.71	0.69	0.74	0.72	0.81	0.77	0.27
RANK		8	6	3	2	5	4	9	7	1

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Alternative Route Selection Matrix
Emphasis on Natural Environment

Figure 2.4f

Built	14%	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I
Feature		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 75' Corridor)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	32.6%	0.16	0.00	0.28	0.13	0.28	0.13	0.22	0.06	1.00
Weighted		0.05	0.00	0.09	0.04	0.09	0.04	0.07	0.02	0.33
Proposed Residential Developments	13.4%	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Weighted		0.00	0.00	0.13	0.13	0.13	0.13	0.13	0.13	0.00
Proximity to Commercial Buildings (300')	9.0%	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09	0.00
Proximity to Industrial Buildings (300')	4.5%	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Weighted		0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05
School, DayCare, Church, Cemetery, Park	40.5%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.06	0.01	0.23	0.17	0.23	0.17	0.30	0.24	0.78
WEIGHTED TOTAL		0.01	0.00	0.03	0.02	0.03	0.02	0.04	0.03	0.11
Natural	72%									
Natural Forests (Acres)	9.3%	0.18	0.64	0.22	0.68	0.22	0.68	0.54	1.00	0.00
Weighted		0.02	0.06	0.02	0.06	0.02	0.06	0.05	0.09	0.00
Stream/River Crossings	38.0%	0.75	0.75	0.75	0.75	0.75	0.75	1.00	1.00	0.00
Weighted		0.29	0.29	0.29	0.29	0.29	0.29	0.38	0.38	0.00
Wetland Areas (Acres)	40.3%	0.23	0.26	0.00	0.04	0.02	0.00	0.62	0.31	1.00
Weighted		0.09	0.11	0.00	0.02	0.01	0.00	0.25	0.12	0.40
Floodplain Areas (Acres)	12.4%	1.00	0.09	1.00	0.09	1.00	0.09	1.00	0.09	0.00
Weighted		0.12	0.01	0.12	0.01	0.12	0.01	0.12	0.01	0.00
TOTAL	100.0%	0.52	0.46	0.43	0.37	0.44	0.36	0.80	0.61	0.40
WEIGHTED TOTAL		0.37	0.33	0.31	0.27	0.31	0.26	0.58	0.44	0.29
Engineering	14%									
Miles of Rebuild with Existing T/L*	65.6%	1.00	1.00	1.00	1.00	0.96	0.96	0.89	0.89	0.00
Weighted		0.66	0.66	0.66	0.66	0.63	0.63	0.58	0.58	0.00
Miles of Co-location with Existing T/L*	19.2%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Weighted		0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.00
Miles of Co-location with Roads*	7.8%	1.00	1.00	0.00	0.00	1.00	1.00	0.80	0.80	1.00
Weighted		0.08	0.08	0.00	0.00	0.08	0.08	0.06	0.06	0.08
Total Project Costs	7.4%	0.52	0.30	0.06	0.00	0.10	0.07	0.89	0.87	1.00
Weighted		0.04	0.02	0.00	0.00	0.01	0.01	0.07	0.06	0.07
TOTAL	100.0%	0.96	0.95	0.85	0.85	0.90	0.90	0.91	0.90	0.15
WEIGHTED TOTAL		0.13	0.13	0.12	0.12	0.13	0.13	0.13	0.13	0.02
SUM OF WEIGHTED TOTALS		0.52	0.47	0.46	0.41	0.47	0.41	0.75	0.60	0.42
RANK		7	5	4	2	6	1	9	8	3

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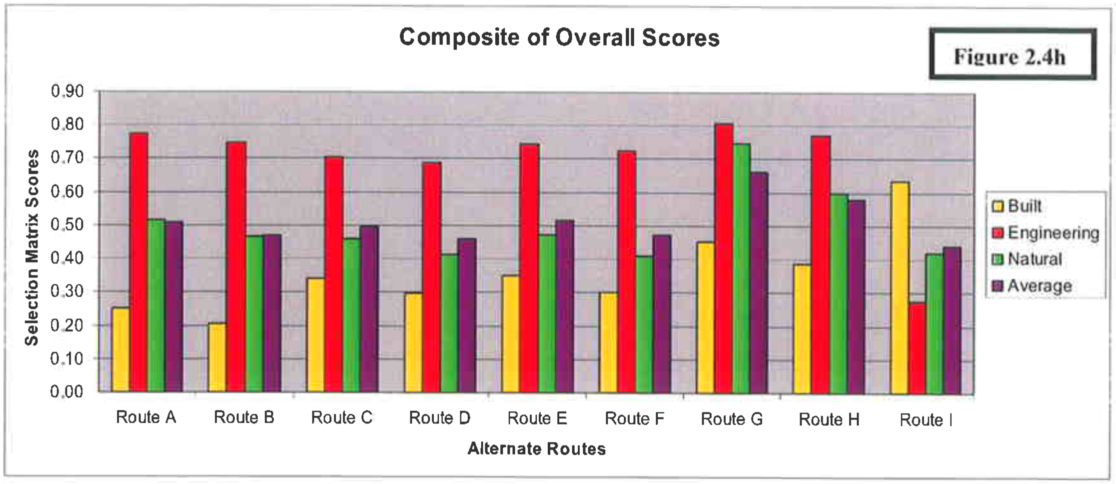
EAST KENTUCKY POWER COOPERATIVE

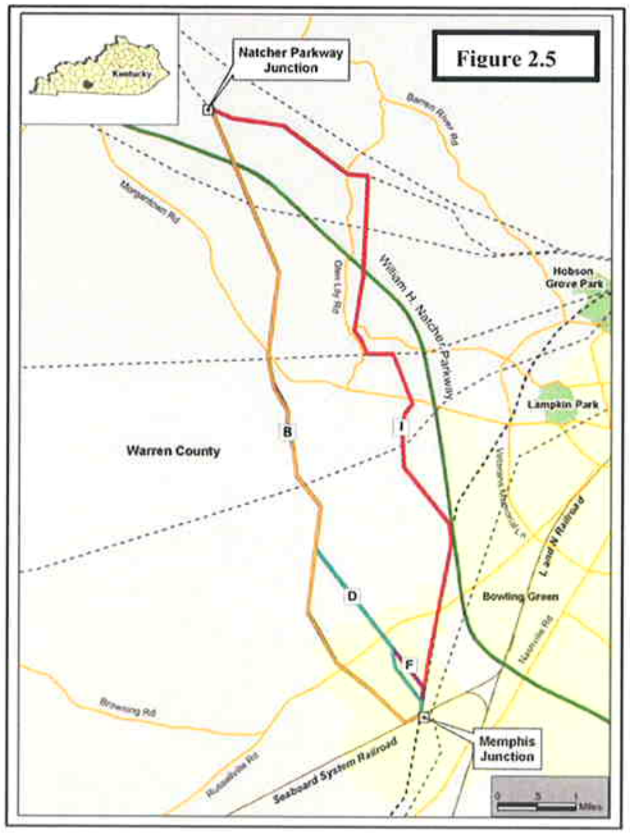
Alternative Route Selection Matrix
Equal Consideration of Categories

Figure 2.4g

Built	33%	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I
Feature		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 75' Corridor)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	32.6%	0.16	0.00	0.28	0.13	0.28	0.13	0.22	0.06	1.00
Weighted		0.05	0.00	0.09	0.04	0.09	0.04	0.07	0.02	0.33
Proposed Residential Developments	13.4%	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Weighted		0.00	0.00	0.13	0.13	0.13	0.13	0.13	0.13	0.00
Proximity to Commercial Buildings (300')	9.0%	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09	0.00
Proximity to Industrial Buildings (300')	4.5%	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Weighted		0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.05
School, DayCare, Church, Cemetery, Park	40.5%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.06	0.01	0.23	0.17	0.23	0.17	0.30	0.24	0.78
WEIGHTED TOTAL		0.02	0.00	0.07	0.06	0.07	0.06	0.10	0.08	0.26
Natural	33%									
Natural Forests (Acres)	9.3%	0.18	0.64	0.22	0.68	0.22	0.68	0.54	1.00	0.00
Weighted		0.02	0.06	0.02	0.06	0.02	0.06	0.05	0.09	0.00
Stream/River Crossings	38.0%	0.75	0.75	0.75	0.75	0.75	0.75	1.00	1.00	0.00
Weighted		0.29	0.29	0.29	0.29	0.29	0.29	0.38	0.38	0.00
Wetland Areas (Acres)	40.3%	0.23	0.26	0.00	0.04	0.02	0.00	0.62	0.31	1.00
Weighted		0.09	0.11	0.00	0.02	0.01	0.00	0.25	0.12	0.40
Floodplain Areas (Acres)	12.4%	1.00	0.09	1.00	0.09	1.00	0.09	1.00	0.09	0.00
Weighted		0.12	0.01	0.12	0.01	0.12	0.01	0.12	0.01	0.00
TOTAL	100.0%	0.52	0.46	0.43	0.37	0.44	0.36	0.80	0.61	0.40
WEIGHTED TOTAL		0.17	0.15	0.14	0.12	0.14	0.12	0.27	0.20	0.13
Engineering	33%									
Miles of Rebuild with Existing T/L*	65.6%	1.00	1.00	1.00	1.00	0.96	0.96	0.89	0.89	0.00
Weighted		0.66	0.66	0.66	0.66	0.63	0.63	0.58	0.58	0.00
Miles of Co-location with Existing T/L*	19.2%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Weighted		0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.00
Miles of Co-location with Roads*	7.8%	1.00	1.00	0.00	0.00	1.00	1.00	0.80	0.80	1.00
Weighted		0.08	0.08	0.00	0.00	0.08	0.08	0.06	0.06	0.08
Total Project Costs	7.4%	0.52	0.30	0.06	0.00	0.10	0.07	0.89	0.87	1.00
Weighted		0.04	0.02	0.00	0.00	0.01	0.01	0.07	0.06	0.07
TOTAL	100.0%	0.96	0.95	0.85	0.85	0.90	0.90	0.91	0.90	0.15
WEIGHTED TOTAL		0.32	0.31	0.28	0.28	0.30	0.30	0.30	0.30	0.05
SUM OF WEIGHTED TOTALS		0.51	0.47	0.50	0.46	0.52	0.47	0.66	0.58	0.44
RANK		6	3	5	2	7	4	9	8	1



2.5. Top Routes:



After evaluating all possible routes within the network of alternatives, the following routes surfaced to be the most suitable.

2.5.1. Route B:

Route B scores best when emphasis is placed on items in the Built Environment. It has the lowest number of residences within close proximity.

Route B begins by heading in a southwestern direction for a short distance along an existing transmission line from the southern substation then turning northwest to avoid proposed and existing developments. And begins to head in a more northerly direction, primarily impacting agricultural fields and some forested areas. It crosses Highway 231 approx. 1.7 miles south of the intersection with Price Chapel Road and proceeds in a northerly direction through a mainly forested area with some agriculture.

2.5.2. Route D:

Route D scores best when all categories are consider equal in the route selection matrix. Route D has moderate scores for most items. However, it is the least costly route. This is primarily due to low property cost, low forested acres to clear, and no double circuit sections.

Route D follows a similar path as Route B with the exception of the first 2.5 miles on the southern end of the project. This route co-locates with an existing transmission line for a short distance, and then turns northwest crossing areas of proposed developments and areas currently developing before joining the same path as Route B.

2.5.3. Route F:

Route F scores best when emphasis is placed on Natural Environment items. Route F impacts the lowest amount of wetlands and impacts a low amount of floodplain acreage. It also scores fairly well in the Built Environment due to a low number of homes in close proximity.

Route F is virtually the same as Route D with a small deviation on the southern end, crossing the same properties.

2.5.4. Route I:

Route I scores best when emphasis is placed on Engineering Concerns. However, Route I is the most costly route of all the corridors, due to double circuiting costs. It scores the best because of the amount of co-location. This includes 4.8 miles with existing transmission lines.

Route I follows the engineering corridor, co-locating with existing transmission lines where possible on the eastern side of the study area. However, this path leads Route I through the most urbanized sections of the study area.

2.6. Expert Judgment:

In the Expert Judgment Matrix, the top routes from the Route Selection Matrix are examined by the routing team. For this project the team determined that Community Issues and Schedule Delay Risks were the greatest concern followed by Construction and Maintenance Accessibility Issues and Visual Issues.

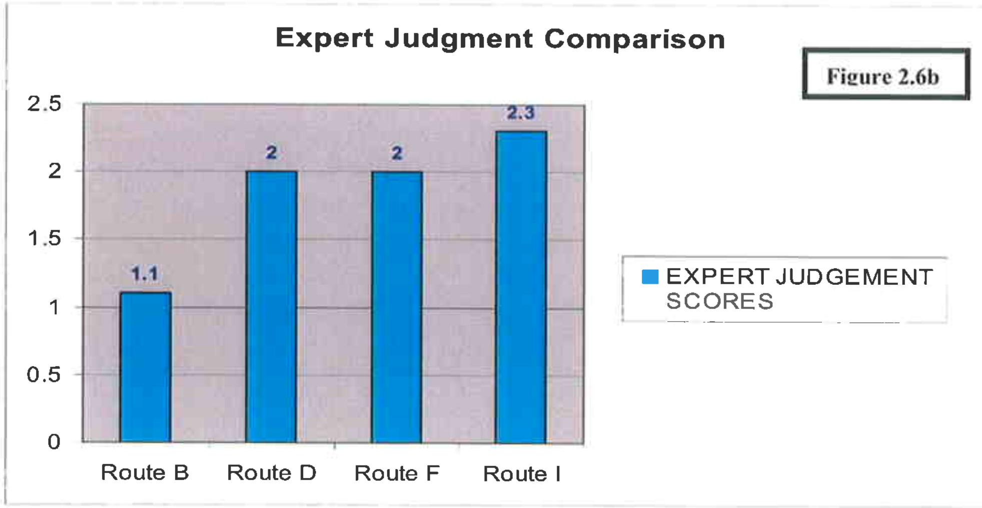
Route B was given a low impact score for all categories, with the exception of a moderate impact score for construction and maintenance accessibility. It received low impact scores in Community Issues, Visual Issues, Schedule Delay risk due to the rural nature of this route, low number of homes in close proximity, and a fairly low amount of parcels impacted. It received a moderate impact score in Construction and Maintenance Accessibility Issues due to the new cross country corridor.

Route D and Route F received moderate impact scores in all categories. This is due to the impact to areas of proposed developments and currently developing areas. It received a moderate impact score in Construction and Maintenance Accessibility Issues due to the new cross country corridor, as with Route B.

Route I received a low impact score for Construction and Maintenance Accessibility Issues due to the amount of co-location with existing transmission lines. It received moderate impact scores for Visual Issues and Schedule Delay Risks due to the dense urban areas along this route. Although this route primarily co-locates, it will also require approx. 5 miles of new corridor in urbanized areas. It also received a high impact score for Community Issues also due to the dense urban areas and close proximity to the most homes of all the corridors.

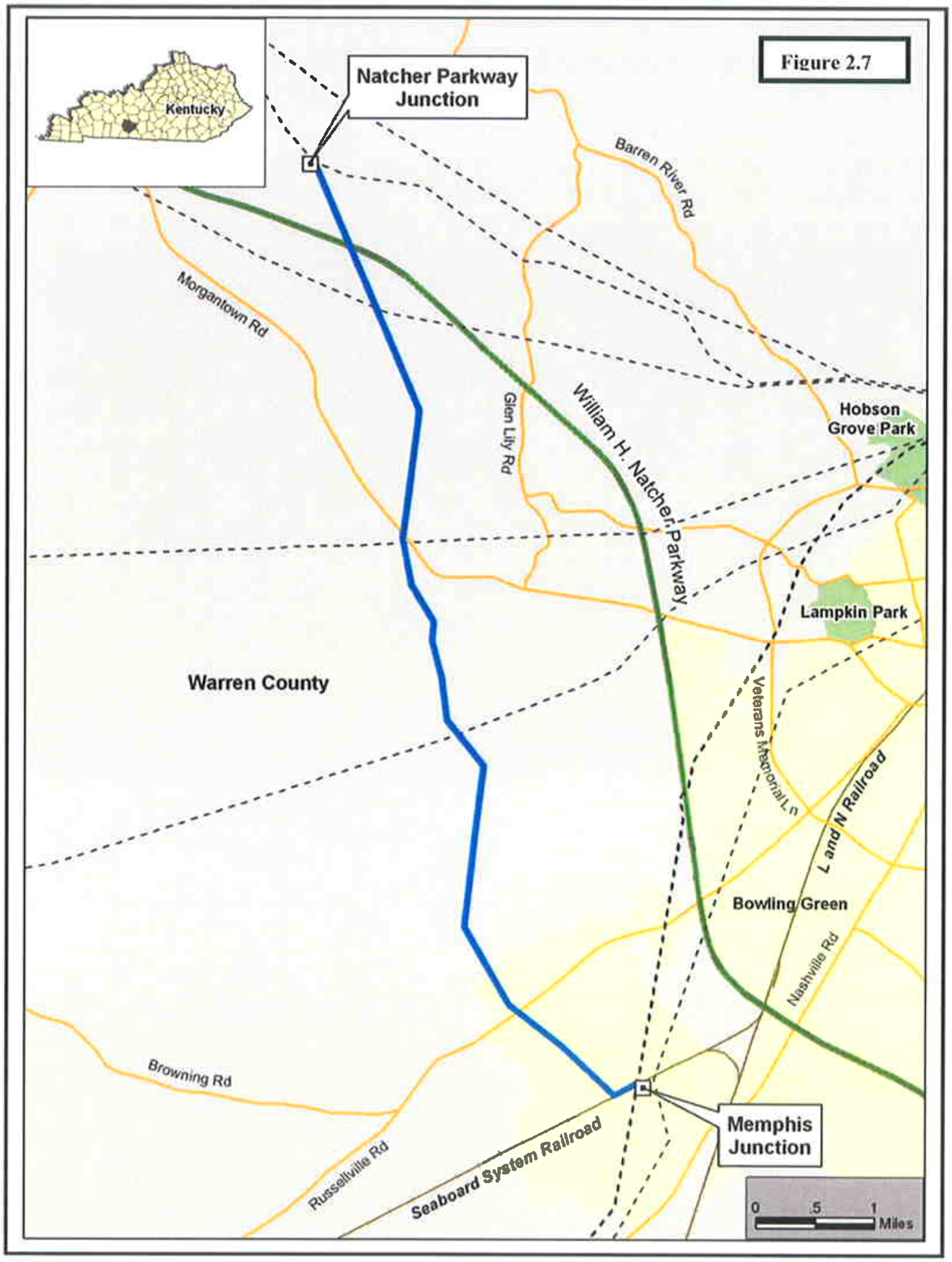
Figure 2.6a

EXPERT JUDGEMENT	**1 = Low Impact 2 = Medium Impact 3 = High Impact**				
	Per Project	**Route B**	**Route D**	**Route F**	**Route I**
Visual Issues	10%	1	2	2	2
Weighted		0.1	0.2	0.2	0.2
Community Issues	40%	1	2	2	3
Weighted		0.4	0.8	0.8	1.2
Schedule Delay Risk (Parcels)	40%	1	2	2	2
Weighted		0.4	0.8	0.8	0.8
Construction/ Maintenance Accessability	10%	2	2	2	1
Weighted		0.2	0.2	0.2	0.1
TOTAL					
	100%	1.1	2	2	2.3



2.7. Conclusion:

Overall, Route B scores the best in the Expert Judgment Matrix and is therefore the preferred corridor. According to EKPC's internal process, this corridor is subject to refinement based on local input and more detailed data.



3. Barren – Oakland – Magna

3.1. Macro Corridors:

The first step in this methodology is Macro Corridor creation, which defines an area for more detailed study. Typically for this stage, the best available land cover dataset based on 30m LandSat imagery is used. In the case of this area, the best available is from 1992.

The macro corridors identified an area approx. 132 sq miles east of Bowling Green and South of Mammoth Cave. The study area is predominately agricultural with pockets of urbanized land use and forests.

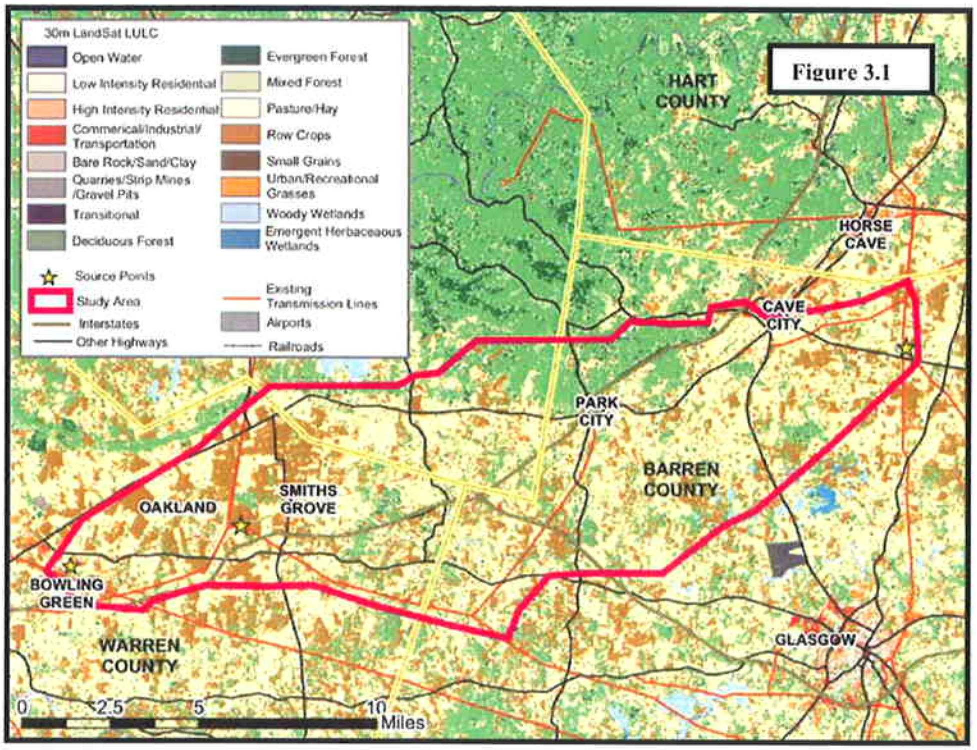


Figure 3.1

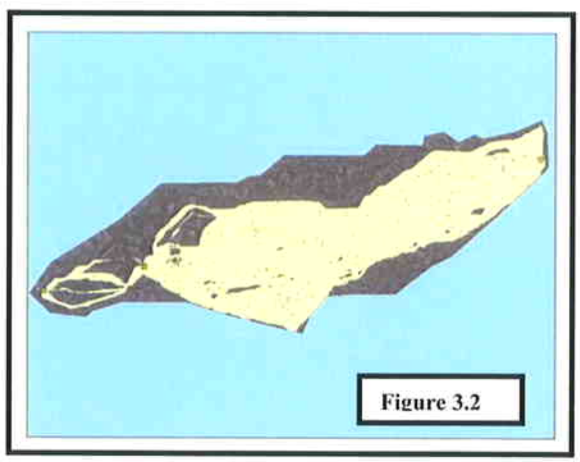


Figure 3.2

3.2. Alternative Corridors:

Once the Macro Corridors are identified, detailed datasets are developed for siting purposes. Weight and values are assigned to the datasets and alterative corridors are generated. In the Alternative Corridor phase, there were no deviations from the EPRI methodology or changes to the standardized weights and values.

3.2.1. Built Environment Corridor:

The Built Environment Corridor from Barren to Oakland encompassed a wide swath through the middle of the study area, providing many routing options. This was due to the rural nature of this section of the study area.

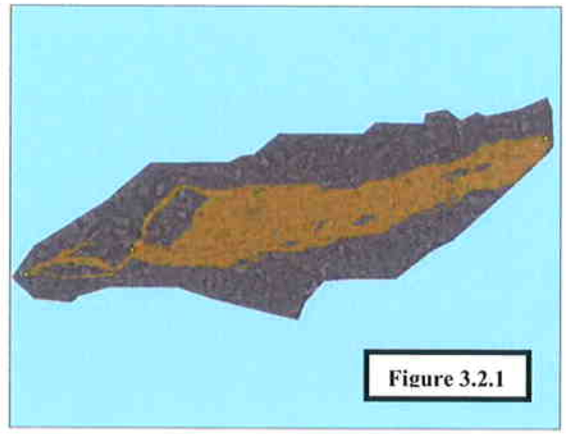


Figure 3.2.1

The Built Environment Corridor from Oakland to Magna is more defined and generated three distinct corridors, one to the north of the town of Oakland, and two to the south. All three are cross country corridors.

3.2.2. Natural Environment Corridor:

The Natural Environment Corridor from Barren to Oakland encompassed an even larger corridor than the Built Environment Corridor. This corridor covers the same area as the built corridor, but adding additional areas in the southern portion of the study area. This large area was generated primarily due to the lack of natural features in the study area. The corridor avoided the northern section of the study area primarily due to bat habitat.

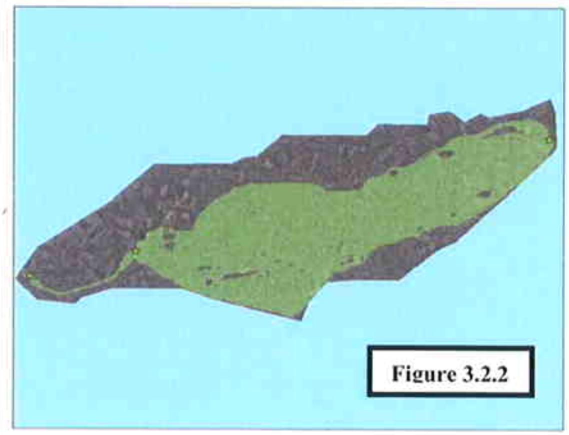


Figure 3.2.2

The Natural Environment Corridor from Oakland to Magna followed the existing transmission line between the two points.

3.2.3. Engineering Concerns Corridor:

The Engineering Corridor was much more defined than the previous two, utilizing existing corridors. It begins by roughly paralleling an existing transmission line past Cave City. Next, it roughly parallels a road from the south side of Cave City to close proximity to Park City. Finally it parallels with another existing transmission line all the way to Oakland.

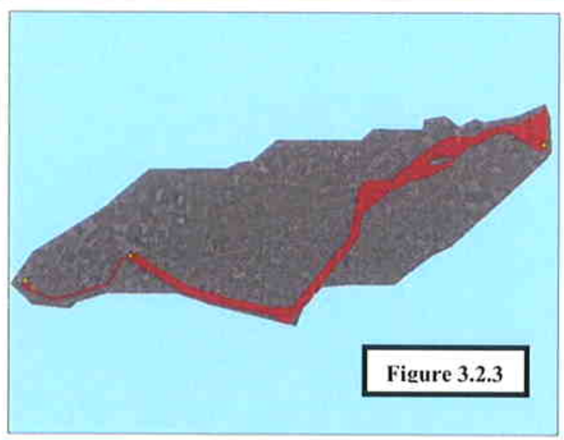


Figure 3.2.3

The Engineering Corridor from Oakland to Magna follows the same transmission line as the Natural Corridor, paralleling an existing transmission line to the south of the town of Oakland.

3.2.4. Averaged Corridor:

The Averaged Corridor from Barren to Oakland begins with a wide track similar to the Built and Natural Corridor, until reaching the existing transmission line west and south of Park City, at which point the corridor becomes more defined and mimics the Engineering Corridor.

The Averaged Corridor from Oakland to Magna follows the same existing transmission line corridor as the Natural Environment and Engineering Concerns Corridor.

Figure 3.2.4

3.3. Alternate Routes:

The siting team analyzed the alternate corridors and identified alternate routes within the alternative corridors. These alternate routes were compared using the route selection matrix documented in the siting methodology.

Figure 3.3a

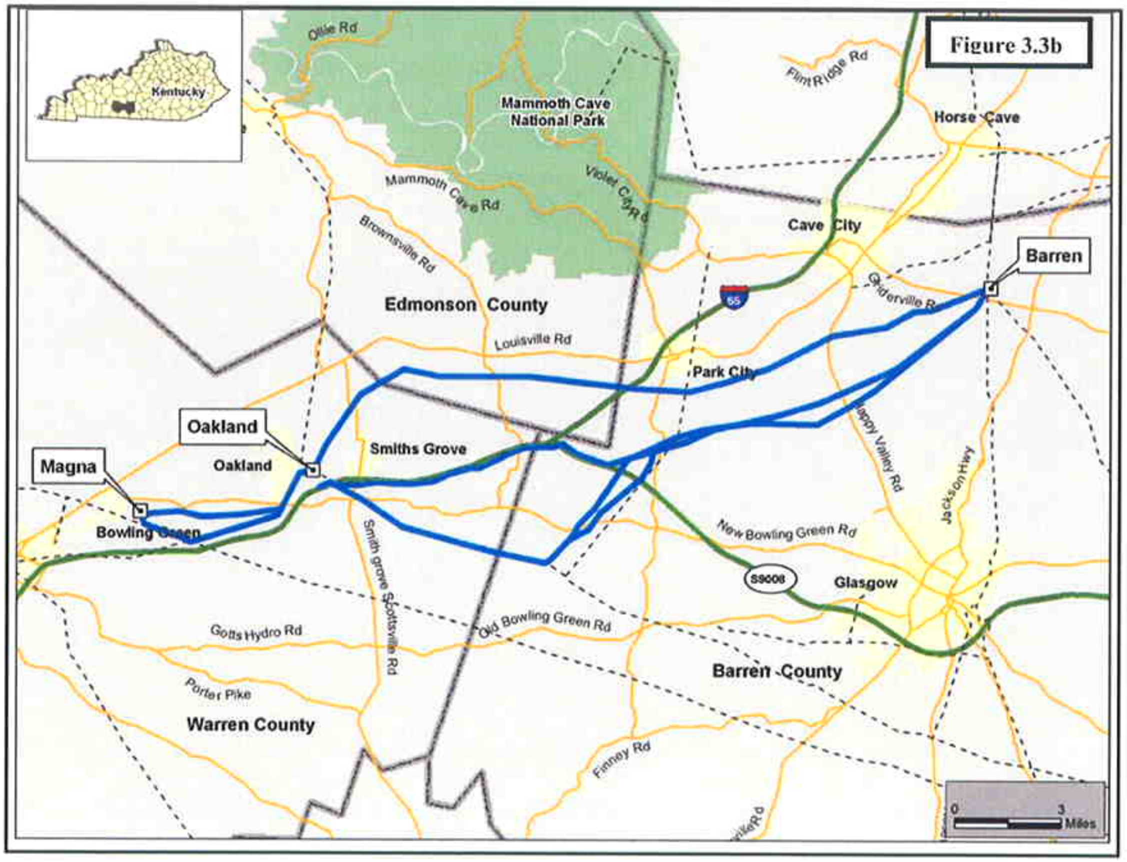


Figure 3.3b
Kentucky
Mammoth Cave National Park
Ollie Rd
Flint Ridge Rd
Horse Cave
Mammoth Cave Rd
Violet Cave Rd
Brownsville Rd
Cave City
Barren
Edmonson County
Glidervile Rd
Louisville Rd
Park City
Oakland
Magna
Smiths Grove
Happy Valley Rd
Jackson Hwy
Bowling Green
New Bowling Green Rd
Smith grove Scottsville Rd
Glasgow
Gotts Hydro Rd
Old Bowling Green Rd
Barren County
Porter Pike
Warren County
Finney Rd
Miles

3.4. Alternate Route Evaluation:

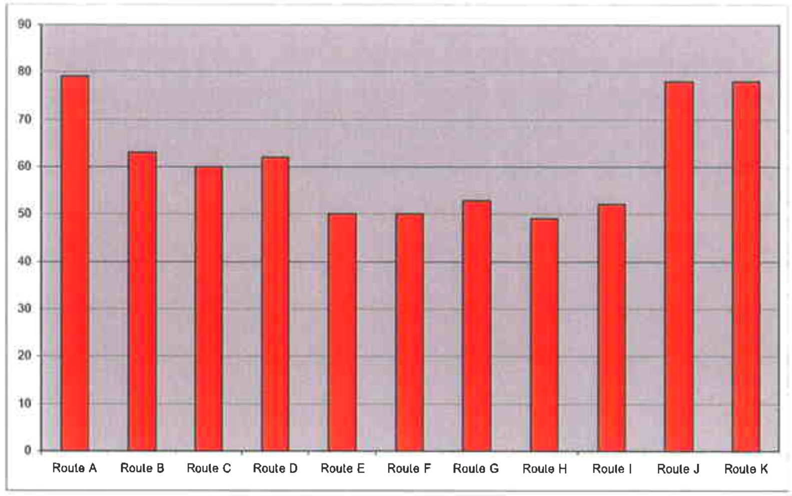
Figure 3.4a

Raw Statistics and Normalized Statistics

FOR ALL ROUTES											
Built	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I	Route J	Route K
Feature											
Relocated Residences (within 100' Corridor)	0	0	0	0	0	0	0	0	0	0	0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proximity to Residences (300')	14	11	13	11	13	9	11	9	11	14	16
Normalized	0.7	0.3	0.6	0.3	0.6	0.0	0.3	0.0	0.3	0.7	1.0
Proposed Developments	0	2	1	2	1	2	1	2	1	2	1
Normalized	0.0	1.0	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0	0.5
Proximity to Commercial Buildings (300')	0	0	0	0	0	0	0	0	0	0	0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proximity to Industrial Buildings (300')	1	0	0	0	0	0	0	0	0	2	2
Normalized	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
School, DayCare, Church, Cemetery, Park Parcels (#)	0	0	0	0	0	0	0	0	0	0	0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	1	0	0	0	0	0	0	0	0	0	0
Normalized	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural											
Natural Forests (Acres)	16.0	19.9	23.4	21.4	24.8	14.0	17.4	15.4	18.8	30.0	33.4
Normalized	0.1	0.3	0.5	0.4	0.6	0.0	0.2	0.1	0.2	0.8	1.0
Stream/River Crossings	0	8	9	8	9	5	6	5	6	7	7
Normalized	0.0	0.9	1.0	0.9	1.0	0.6	0.7	0.6	0.7	0.8	0.8
Wetland Areas (Acres)	2.9	4.1	2.0	4.2	2.2	4.0	1.9	4.1	2.1	5.2	3.2
Normalized	0.3	0.7	0.0	0.7	0.1	0.6	0.0	0.7	0.0	1.0	0.4
Floodplain Areas (Acres)	0.0	2.2	2.2	2.2	2.2	0.0	0.0	0.0	0.0	4.2	4.2
Normalized	0.0	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	1.0	1.0
Engineering											
Length (Miles)	20.8	22.2	22.2	22.5	22.2	22.4	22.1	22.5	22.2	20.6	20.4
Normalized	0.2	0.9	0.9	1.0	0.9	1.0	0.8	1.0	0.9	0.1	0.0
Miles of Rebuild with Existing T/L*	0.0	8.0	8.0	8.0	8.0	10.9	10.9	10.9	10.9	0.0	0.0
Normalized	0.0	0.7	0.7	0.7	0.7	1.0	1.0	1.0	1.0	0.0	0.0
Inverted	1.0	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	1.0	1.0
Miles of Co-location with Existing T/L*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Inverted	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Miles of Co-location with Roads*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	7.1
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0
Inverted	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0
Number of Parcels	79	63	60	62	50	50	53	49	52	78	78
Normalized	1.0	0.5	0.4	0.4	0.0	0.0	0.1	0.0	0.1	1.0	1.0
Total Project Costs	$6,927,912	$8,180,225	$8,119,230	$8,269,516	$8,120,288	$8,505,205	$8,351,971	$8,534,192	$8,398,052	$6,914,212	$6,800,813
Normalized	0.1	0.8	0.8	0.8	0.8	1.0	0.9	1.0	0.9	0.1	0.0

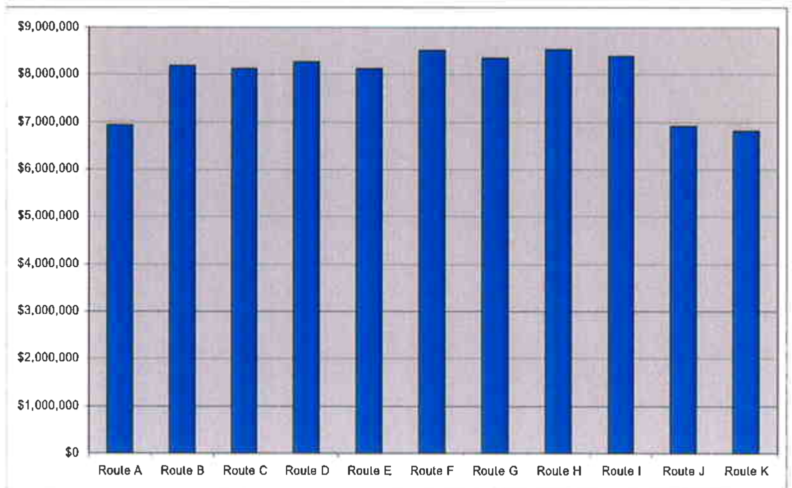
Number of Parcels Crossed

Figure 3.4b



Comparative Costs

Figure 3.4c



Alternative Route Selection Matrix
Emphasis on Built Environment

Figure 3.4d

Built	72%	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I	Route J	Route K
Feature		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 75' Corridor)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	36.4%	0.71	0.29	0.57	0.29	0.57	0.00	0.29	0.00	0.29	0.71	1.00
Weighted		0.26	0.10	0.21	0.10	0.21	0.00	0.10	0.00	0.10	0.26	0.36
Proposed Residential Developments	15.3%	0.00	1.00	0.50	1.00	0.50	1.00	0.50	1.00	0.50	1.00	0.50
Weighted		0.00	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08
Proximity to Commercial Buildings (300')	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Industrial Buildings (300')	5.1%	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
School, DayCare, Church, Cemetery, Park	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	43.2%	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.72	0.26	0.28	0.26	0.28	0.15	0.18	0.15	0.18	0.46	0.49
WEIGHTED TOTAL		0.52	0.19	0.20	0.19	0.20	0.11	0.13	0.11	0.13	0.33	0.35
Natural	14%											
Natural Forests (Acres)	9.3%	0.10	0.30	0.48	0.38	0.56	0.00	0.18	0.07	0.25	0.82	1.00
Weighted		0.01	0.03	0.05	0.04	0.05	0.00	0.02	0.01	0.02	0.08	0.09
Stream/River Crossings	38.0%	0.00	0.89	1.00	0.89	1.00	0.56	0.67	0.56	0.67	0.78	0.78
Weighted		0.00	0.34	0.38	0.34	0.38	0.21	0.25	0.21	0.25	0.30	0.30
Wetland Areas (Acres)	40.3%	0.32	0.65	0.03	0.70	0.08	0.62	0.00	0.67	0.05	1.00	0.38
Weighted		0.13	0.26	0.01	0.28	0.03	0.25	0.00	0.27	0.02	0.40	0.15
Floodplain Areas (Acres)	12.4%	0.00	0.52	0.52	0.52	0.52	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.00	0.06	0.06	0.06	0.06	0.00	0.00	0.00	0.00	0.12	0.12
TOTAL	100.0%	0.14	0.69	0.50	0.72	0.53	0.46	0.27	0.49	0.30	0.90	0.67
WEIGHTED TOTAL		0.02	0.10	0.07	0.10	0.07	0.06	0.04	0.07	0.04	0.13	0.09
Engineering	14%											
Miles of Rebuild with Existing T/L*	81.2%	1.00	0.27	0.27	0.27	0.27	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.81	0.22	0.22	0.22	0.22	0.00	0.00	0.00	0.00	0.81	0.81
Miles of Co-location with Existing T/L*	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miles of Co-location with Roads*	9.7%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Weighted		0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00
Total Project Costs	9.1%	0.07	0.80	0.76	0.85	0.76	0.98	0.89	1.00	0.92	0.07	0.00
Weighted		0.01	0.07	0.07	0.08	0.07	0.09	0.08	0.09	0.08	0.01	0.00
TOTAL	100.0%	0.92	0.39	0.38	0.39	0.38	0.19	0.18	0.19	0.18	0.82	0.81
WEIGHTED TOTAL		0.13	0.05	0.05	0.05	0.05	0.03	0.02	0.03	0.03	0.11	0.11
SUM OF WEIGHTED TOTALS		0.66	0.34	0.33	0.34	0.33	0.20	0.19	0.20	0.20	0.57	0.56
RANK		11	7	5	8	6	3	1	4	2	10	9

Alternative Route Selection Matrix
Emphasis on Engineering Concerns

Figure 3.4e

Built	14%	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I	Route J	Route K
Feature		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 75' Corridor)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	36.4%	0.71	0.29	0.57	0.29	0.57	0.00	0.29	0.00	0.29	0.71	1.00
Weighted		0.26	0.10	0.21	0.10	0.21	0.00	0.10	0.00	0.10	0.26	0.36
Proposed Residential Developments	15.3%	0.00	1.00	0.50	1.00	0.50	1.00	0.50	1.00	0.50	1.00	0.50
Weighted		0.00	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08
Proximity to Commercial Buildings (300')	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Industrial Buildings (300')	5.1%	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
School, DayCare, Church, Cemetery, Park	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	43.2%	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.72	0.26	0.28	0.26	0.28	0.15	0.18	0.15	0.18	0.46	0.49
WEIGHTED TOTAL		0.10	0.04	0.04	0.04	0.04	0.02	0.03	0.02	0.03	0.06	0.07
Natural	14%											
Natural Forests (Acres)	9.3%	0.10	0.30	0.48	0.38	0.56	0.00	0.18	0.07	0.25	0.82	1.00
Weighted		0.01	0.03	0.05	0.04	0.05	0.00	0.02	0.01	0.02	0.08	0.09
Stream/River Crossings	38.0%	0.00	0.89	1.00	0.89	1.00	0.56	0.67	0.56	0.67	0.78	0.78
Weighted		0.00	0.34	0.38	0.34	0.38	0.21	0.25	0.21	0.25	0.30	0.30
Wetland Areas (Acres)	40.3%	0.32	0.65	0.03	0.70	0.08	0.62	0.00	0.67	0.05	1.00	0.38
Weighted		0.13	0.26	0.01	0.28	0.03	0.25	0.00	0.27	0.02	0.40	0.15
Floodplain Areas (Acres)	12.4%	0.00	0.52	0.52	0.52	0.52	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.00	0.06	0.06	0.06	0.06	0.00	0.00	0.00	0.00	0.12	0.12
TOTAL	100.0%	0.14	0.69	0.50	0.72	0.53	0.46	0.27	0.49	0.30	0.90	0.67
WEIGHTED TOTAL		0.02	0.10	0.07	0.10	0.07	0.06	0.04	0.07	0.04	0.13	0.09
Engineering	72%											
Miles of Rebuild with Existing T/L*	81.2%	1.00	0.27	0.27	0.27	0.27	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.81	0.22	0.22	0.22	0.22	0.00	0.00	0.00	0.00	0.81	0.81
Miles of Co-location with Existing T/L*	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miles of Co-location with Roads*	9.7%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Weighted		0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00
Total Project Costs	9.1%	0.07	0.80	0.76	0.85	0.76	0.98	0.89	1.00	0.92	0.07	0.00
Weighted		0.01	0.07	0.07	0.08	0.07	0.09	0.08	0.09	0.08	0.01	0.00
TOTAL	100.0%	0.92	0.39	0.38	0.39	0.38	0.19	0.18	0.19	0.18	0.82	0.81
WEIGHTED TOTAL		0.66	0.28	0.28	0.28	0.28	0.13	0.13	0.14	0.13	0.59	0.58
SUM OF WEIGHTED TOTALS		0.78	0.41	0.39	0.42	0.39	0.22	0.19	0.22	0.20	0.78	0.75
RANK		**10**	**7**	**5**	**8**	**6**	**3**	**1**	**4**	**2**	**11**	**9**

Alternative Route Selection Matrix
Emphasis on Natural Environment

Figure 3.4f

PHOTO SCIENCE Geospatial Solutions

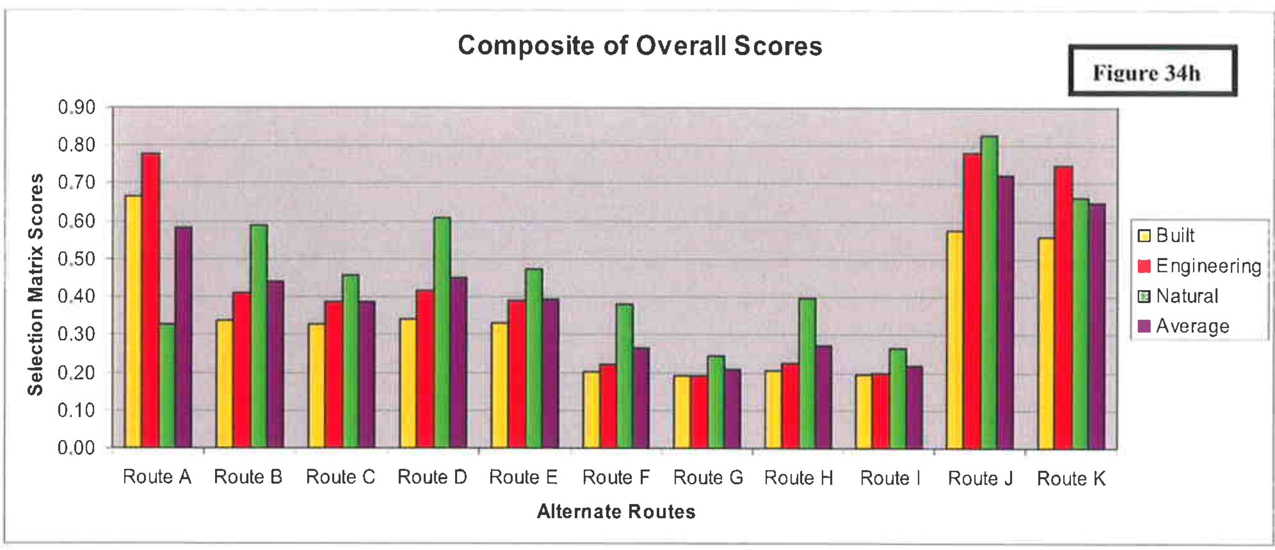
EAST KENTUCKY POWER COOPERATIVE

Built	14%	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I	Route J	Route K
Feature		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 75' Corridor)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	36.4%	0.71	0.29	0.57	0.29	0.57	0.00	0.29	0.00	0.29	0.71	1.00
Weighted		0.26	0.10	0.21	0.10	0.21	0.00	0.10	0.00	0.10	0.26	0.36
Proposed Residential Developments	15.3%	0.00	1.00	0.50	1.00	0.50	1.00	0.50	1.00	0.50	1.00	0.50
Weighted		0.00	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08
Proximity to Commercial Buildings (300')	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Industrial Buildings (300')	5.1%	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
School, DayCare, Church, Cemetery, Park	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	43.2%	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.72	0.26	0.28	0.26	0.28	0.15	0.18	0.15	0.18	0.46	0.49
WEIGHTED TOTAL		0.10	0.04	0.04	0.04	0.04	0.02	0.03	0.02	0.03	0.06	0.07
Natural	72%											
Natural Forests (Acres)	9.3%	0.10	0.30	0.48	0.38	0.56	0.00	0.18	0.07	0.25	0.82	1.00
Weighted		0.01	0.03	0.05	0.04	0.05	0.00	0.02	0.01	0.02	0.08	0.09
Stream/River Crossings	38.0%	0.00	0.89	1.00	0.89	1.00	0.56	0.67	0.56	0.67	0.78	0.78
Weighted		0.00	0.34	0.38	0.34	0.38	0.21	0.25	0.21	0.25	0.30	0.30
Wetland Areas (Acres)	40.3%	0.32	0.65	0.03	0.70	0.08	0.62	0.00	0.67	0.05	1.00	0.38
Weighted		0.13	0.26	0.01	0.28	0.03	0.25	0.00	0.27	0.02	0.40	0.15
Floodplain Areas (Acres)	12.4%	0.00	0.52	0.52	0.52	0.52	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.00	0.06	0.06	0.06	0.06	0.00	0.00	0.00	0.00	0.12	0.12
TOTAL	100.0%	0.14	0.69	0.50	0.72	0.53	0.46	0.27	0.49	0.30	0.90	0.67
WEIGHTED TOTAL		0.10	0.50	0.36	0.52	0.38	0.33	0.19	0.35	0.21	0.65	0.48
Engineering	14%											
Miles of Rebuild with Existing T/L*	81.2%	1.00	0.27	0.27	0.27	0.27	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.81	0.22	0.22	0.22	0.22	0.00	0.00	0.00	0.00	0.81	0.81
Miles of Co-location with Existing T/L*	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miles of Co-location with Roads*	9.7%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Weighted		0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00
Total Project Costs	9.1%	0.07	0.80	0.76	0.85	0.76	0.98	0.89	1.00	0.92	0.07	0.00
Weighted		0.01	0.07	0.07	0.08	0.07	0.09	0.08	0.09	0.08	0.01	0.00
TOTAL	100.0%	0.92	0.39	0.38	0.39	0.38	0.19	0.18	0.19	0.18	0.82	0.81
WEIGHTED TOTAL		0.13	0.05	0.05	0.05	0.05	0.03	0.02	0.03	0.03	0.11	0.11
SUM OF WEIGHTED TOTALS		0.33	0.59	0.46	0.61	0.47	0.38	0.24	0.40	0.26	0.83	0.66
RANK		3	8	6	9	7	4	1	5	2	11	10

Alternative Route Selection Matrix
Equal Consideration of Categories

Figure 3.4g

Built	33%	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I	Route J	Route K
Feature		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 75' Corridor)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	36.4%	0.71	0.29	0.57	0.29	0.57	0.00	0.29	0.00	0.29	0.71	1.00
Weighted		0.26	0.10	0.21	0.10	0.21	0.00	0.10	0.00	0.10	0.26	0.36
Proposed Residential Developments	15.3%	0.00	1.00	0.50	1.00	0.50	1.00	0.50	1.00	0.50	1.00	0.50
Weighted		0.00	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08
Proximity to Commercial Buildings (300')	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Industrial Buildings (300')	5.1%	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
School, DayCare, Church, Cemetery, Park	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	43.2%	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.72	0.26	0.28	0.26	0.28	0.15	0.18	0.15	0.18	0.46	0.49
WEIGHTED TOTAL		0.24	0.08	0.09	0.08	0.09	0.05	0.06	0.05	0.06	0.15	0.16
Natural	33%											
Natural Forests (Acres)	9.3%	0.10	0.30	0.48	0.38	0.56	0.00	0.18	0.07	0.25	0.82	1.00
Weighted		0.01	0.03	0.05	0.04	0.05	0.00	0.02	0.01	0.02	0.08	0.09
Stream/River Crossings	38.0%	0.00	0.89	1.00	0.89	1.00	0.56	0.67	0.56	0.67	0.78	0.78
Weighted		0.00	0.34	0.38	0.34	0.38	0.21	0.25	0.21	0.25	0.30	0.30
Wetland Areas (Acres)	40.3%	0.32	0.65	0.03	0.70	0.08	0.62	0.00	0.67	0.05	1.00	0.38
Weighted		0.13	0.26	0.01	0.28	0.03	0.25	0.00	0.27	0.02	0.40	0.15
Floodplain Areas (Acres)	12.4%	0.00	0.52	0.52	0.52	0.52	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.00	0.06	0.06	0.06	0.06	0.00	0.00	0.00	0.00	0.12	0.12
TOTAL	100.0%	0.14	0.69	0.50	0.72	0.53	0.46	0.27	0.49	0.30	0.90	0.67
WEIGHTED TOTAL		0.05	0.23	0.17	0.24	0.17	0.15	0.09	0.16	0.10	0.30	0.22
Engineering	33%											
Miles of Rebuild with Existing T/L*	81.2%	1.00	0.27	0.27	0.27	0.27	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.81	0.22	0.22	0.22	0.22	0.00	0.00	0.00	0.00	0.81	0.81
Miles of Co-location with Existing T/L*	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miles of Co-location with Roads*	9.7%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Weighted		0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00
Total Project Costs	9.1%	0.07	0.80	0.76	0.85	0.76	0.98	0.89	1.00	0.92	0.07	0.00
Weighted		0.01	0.07	0.07	0.08	0.07	0.09	0.08	0.09	0.08	0.01	0.00
TOTAL	100.0%	0.92	0.39	0.38	0.39	0.38	0.19	0.18	0.19	0.18	0.82	0.81
WEIGHTED TOTAL		0.30	0.13	0.13	0.13	0.13	0.06	0.06	0.06	0.06	0.27	0.27
SUM OF WEIGHTED TOTALS		0.58	0.44	0.39	0.45	0.39	0.26	0.21	0.27	0.22	0.72	0.65
RANK		9	7	5	8	6	3	1	4	2	11	10



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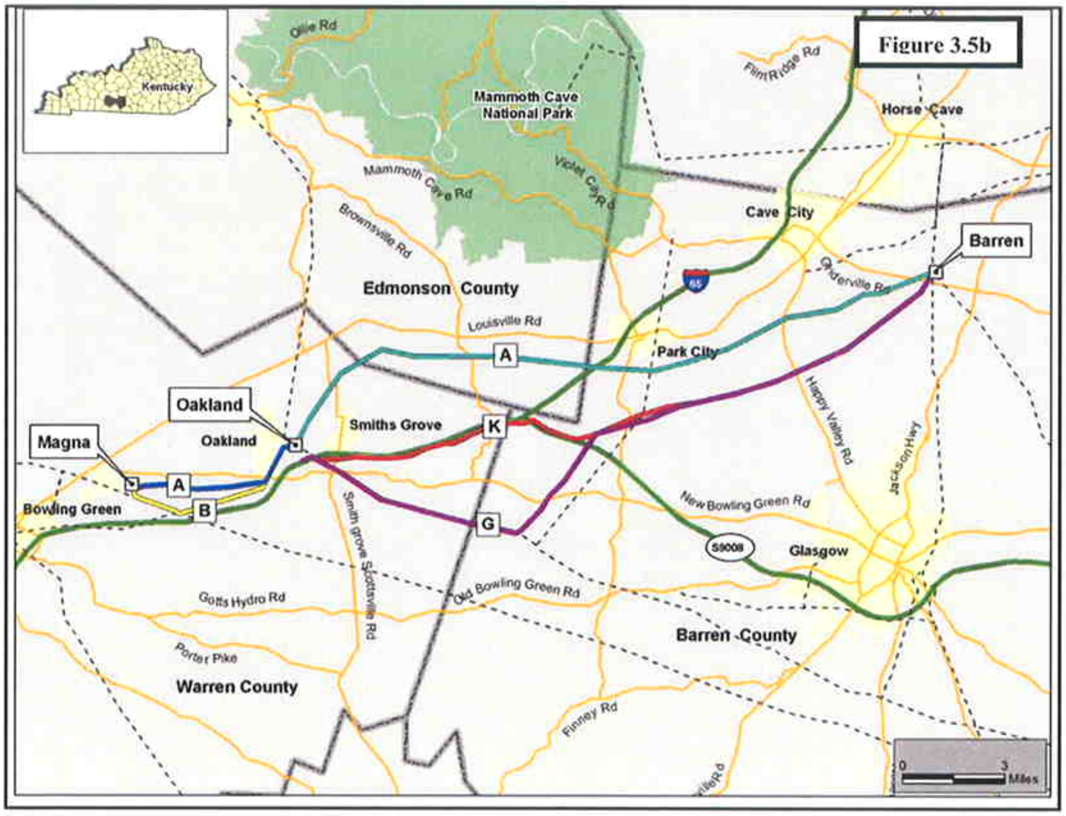
3.5. Top Routes from Barren to Oakland:

Three distinct corridors of routes developed during the Alternative Corridor phase from Barren to Oakland: a cross country corridor to the north, a corridor that parallels the freeway, and a corridor that utilizes existing transmission line corridors. The most suitable routes from each were further analyzed by the routing team

Figure 3.5a

		Cross Country Route Alternative	Utilize Existing Transmission Line Corridors Route Alternatives								Utilize Existing Interstate Corridor Route Alternatives	
Built	33%	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I	Route J	Route K
Feature		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 75' Corridor)	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	36.4%	0.71	0.29	0.57	0.29	0.57	0.00	0.29	0.00	0.29	0.71	1.00
Weighted		0.26	0.10	0.21	0.10	0.21	0.00	0.10	0.00	0.10	0.26	0.36
Proposed Residential Developments	15.3%	0.00	1.00	0.50	1.00	0.50	1.00	0.50	1.00	0.50	1.00	0.50
Weighted		0.00	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08	0.15	0.08
Proximity to Commercial Buildings (300')	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Industrial Buildings (300')	5.1%	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
School, DayCare, Church, Cemetery, Park	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	43.2%	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.72	0.26	0.28	0.26	0.28	0.15	0.18	0.15	0.18	0.46	0.49
WEIGHTED TOTAL		0.24	0.08	0.09	0.08	0.09	0.05	0.06	0.05	0.06	0.15	0.16
Natural	33%											
Natural Forests (Acres)	9.3%	0.10	0.30	0.48	0.38	0.56	0.00	0.18	0.07	0.25	0.82	1.00
Weighted		0.01	0.03	0.05	0.04	0.05	0.00	0.02	0.01	0.02	0.08	0.09
Stream/River Crossings	38.0%	0.00	0.89	1.00	0.89	1.00	0.56	0.67	0.56	0.67	0.78	0.78
Weighted		0.00	0.34	0.38	0.34	0.38	0.21	0.25	0.21	0.25	0.30	0.30
Wetland Areas (Acres)	40.3%	0.32	0.65	0.03	0.70	0.08	0.62	0.00	0.67	0.05	1.00	0.38
Weighted		0.13	0.26	0.01	0.28	0.03	0.25	0.00	0.27	0.02	0.40	0.15
Floodplain Areas (Acres)	12.4%	0.00	0.52	0.52	0.52	0.52	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.00	0.06	0.06	0.06	0.06	0.00	0.00	0.00	0.00	0.12	0.12
TOTAL	100.0%	0.14	0.69	0.50	0.72	0.53	0.46	0.27	0.49	0.30	0.90	0.67
WEIGHTED TOTAL		0.05	0.23	0.17	0.24	0.17	0.15	0.09	0.16	0.10	0.30	0.22
Engineering	33%											
Miles of Rebuild with Existing T/L*	81.2%	1.00	0.27	0.27	0.27	0.27	0.00	0.00	0.00	0.00	1.00	1.00
Weighted		0.81	0.22	0.22	0.22	0.22	0.00	0.00	0.00	0.00	0.81	0.81
Miles of Co-location with Existing T/L*	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miles of Co-location with Roads*	9.7%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Weighted		0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00
Total Project Costs	9.1%	0.07	0.80	0.76	0.85	0.76	0.98	0.89	1.00	0.92	0.07	0.00
Weighted		0.01	0.07	0.07	0.08	0.07	0.09	0.08	0.09	0.08	0.01	0.00
TOTAL	100.0%	0.92	0.39	0.38	0.39	0.38	0.19	0.18	0.19	0.18	0.82	0.81
WEIGHTED TOTAL		0.30	0.13	0.13	0.13	0.13	0.06	0.06	0.06	0.06	0.27	0.27
SUM OF WEIGHTED TOTALS		0.58	0.44	0.39	0.45	0.39	0.26	0.21	0.27	0.22	0.72	0.65
RANK		9	7	5	8	6	3	1	4	2	11	10



3.5.1. Route A:

Route A takes a more northern route, heading north out of Oakland, then turning more east towards Barren. This route is cross country for the entire distance and passes just south of Park City. The land use is predominately agriculture.

3.5.2. Route G:

Route G heads south and then immediately west out of Oakland, rebuilding an existing transmission line until reaching the Louie B. Nunn Parkway. Then it takes a cross country path towards Barren, crossing agricultural areas and some forest.

3.5.3. Route K:

Route K leaves Oakland along Interstate 65 until reaching the same basic path as Route G after 7 miles.

3.6 Expert Judgment:

In the Expert Judgment section the routing team gave the most weight to Community Issues and Schedule Delay Risk followed by Visual Issues and Construction and Maintenance Accessibility.

All routes received low impact scores in each category with the exception of Route A and Route K; which received moderate impact scores in two categories. Route A received a moderate impact score in Construction and Maintenance Accessibility due to the amount of new cross country segments and a moderate impact score in Schedule Delay Risk due to a larger amount of properties crossed with new easement. Route K received moderate scores in Visual Issues due to the segment along the Interstate, which would make this route visible to more people and a moderate impact score in Schedule Delay Risk due to a larger amount of properties crossed with new easement. Route G received low impact scores in all categories, primarily due to the utilization of existing transmission lines for approx. 50% of its length.

Figure 3.6a

EXPERT JUDGEMENT	= Low Impact 2 = Medium Impact 3 = High Impa			
	Per Project	Route A	Route G	Route K
Visual Issues	10%	1	1	2
Weighted		0.1	0.1	0.2
Community Issues	40%	1	1	1
Weighted		0.4	0.4	0.4
Schedule Delay Risk (Parcels)	40%	2	1	2
Weighted		0.8	0.4	0.8
Construction/ Maintenance Accessability	10%	2	1	1
Weighted		0.2	0.1	0.1
TOTAL				
	100%	1.5	1	1.5

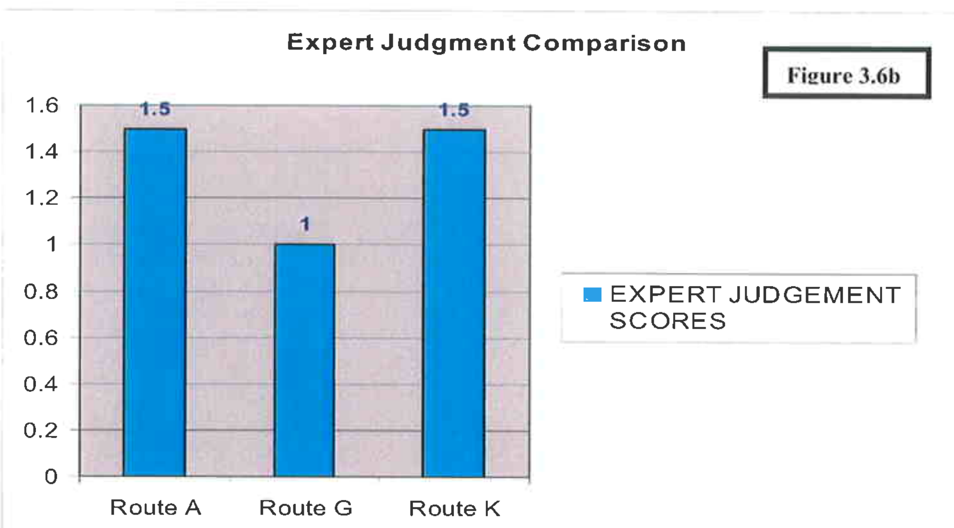
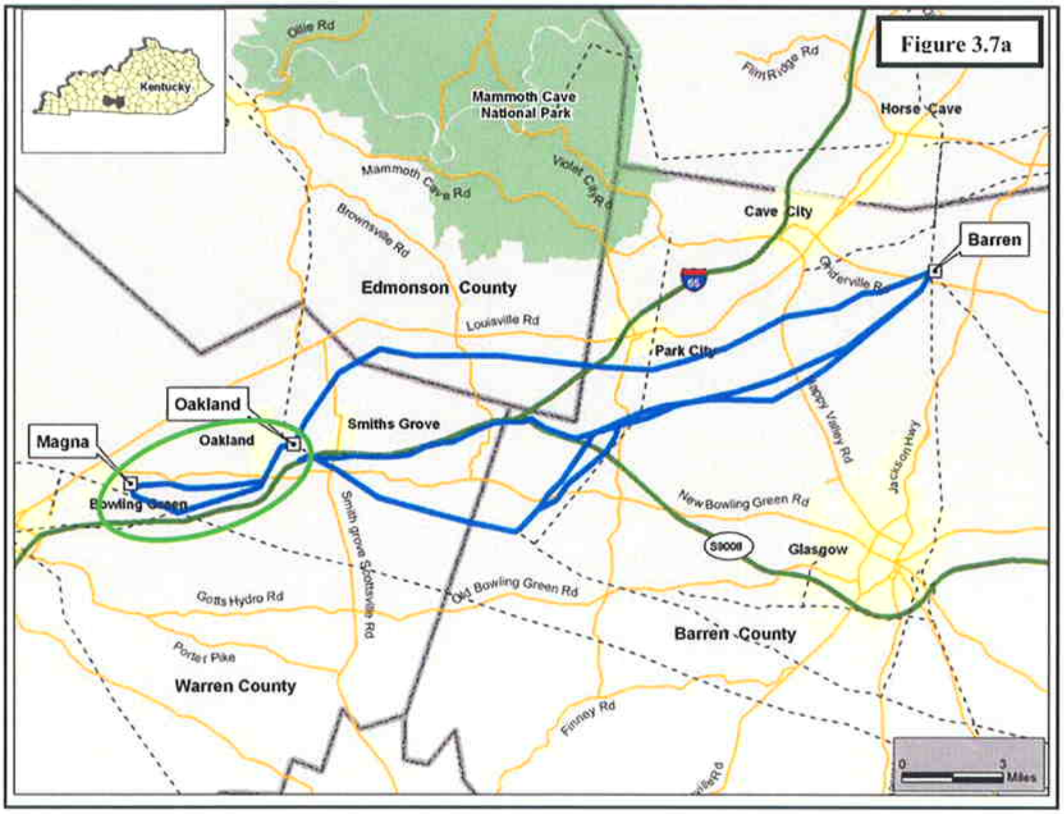


Figure 3.6b

3.7 Alternative Routes from Oakland to Magna:



Two routes were studied from Oakland to Magna. Route A was predominately a cross country route and Route B utilized an existing transmission line. Both routes reach Oakland substation be passing south of the town of Oakland.

In three of the four categories, Route B scores better than Route A in the Route Selection Matrices. Only when the Natural Environment items are emphasized does Route A score more preferably.

Raw Statistics and Normalized Statistics

Figure 3.7b

FOR ALL ROUTES		
Built	**Route A**	**Route B**
Feature	**Unit**	**Unit**
Relocated Residences (within 100' Corridor)	0	0
Normalized	0.0	0.0
Proximity to Residences (300')	9	2
Normalized	1.0	0.0
Proposed Developments	0	0
Normalized	0.0	0.0
Proximity to Commercial Buildings (300')	0	0
Normalized	0.0	0.0
Proximity to Industrial Buildings (300')	1	1
Normalized	1.0	1.0
School, DayCare, Church, Cemetery, Park Parcels (#)	0	0
Normalized	0.0	0.0
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0	0
Normalized	0.0	0.0
Natural		
Natural Forests (Acres)	0.6	0.0
Normalized	1.0	0.0
Stream/River Crossings	0.0	0.0
Normalized	0.0	0.0
Wetland Areas (Acres)	0.0	0.3
Normalized	0.0	1.0
Floodplain Areas (Acres)	0.0	0.0
Normalized	0.0	0.0
Engineering		
Length (Miles)	5.5	6.1
Normalized	0.0	1.0
Miles of Rebuild with Existing T/L*	1.5	4.3
Normalized	0.0	1.0
Inverted	1.0	0.0
Miles of Co-location with Existing T/L*	0	1.47
Normalized	0.0	1.0
Inverted	1.0	0.0
Miles of Co-location with Roads*	0.3	0.3
Normalized	1.0	1.0
Inverted	1.0	1.0
Number of Parcels	26	9
Normalized	1.0	0.0
Total Project Costs	$2,117,808	$2,460,562
Normalized	0.0	1.0

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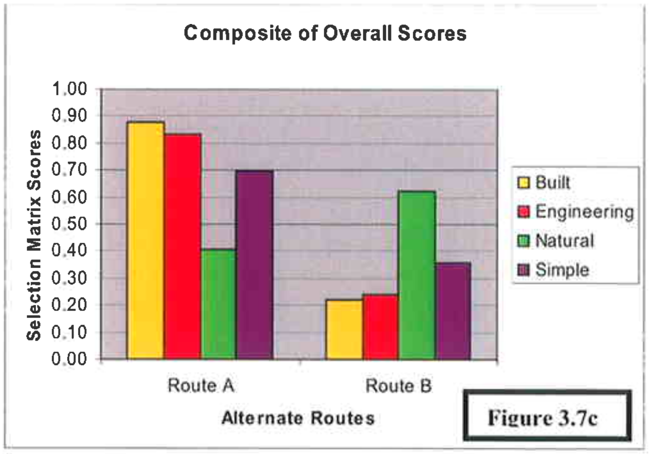
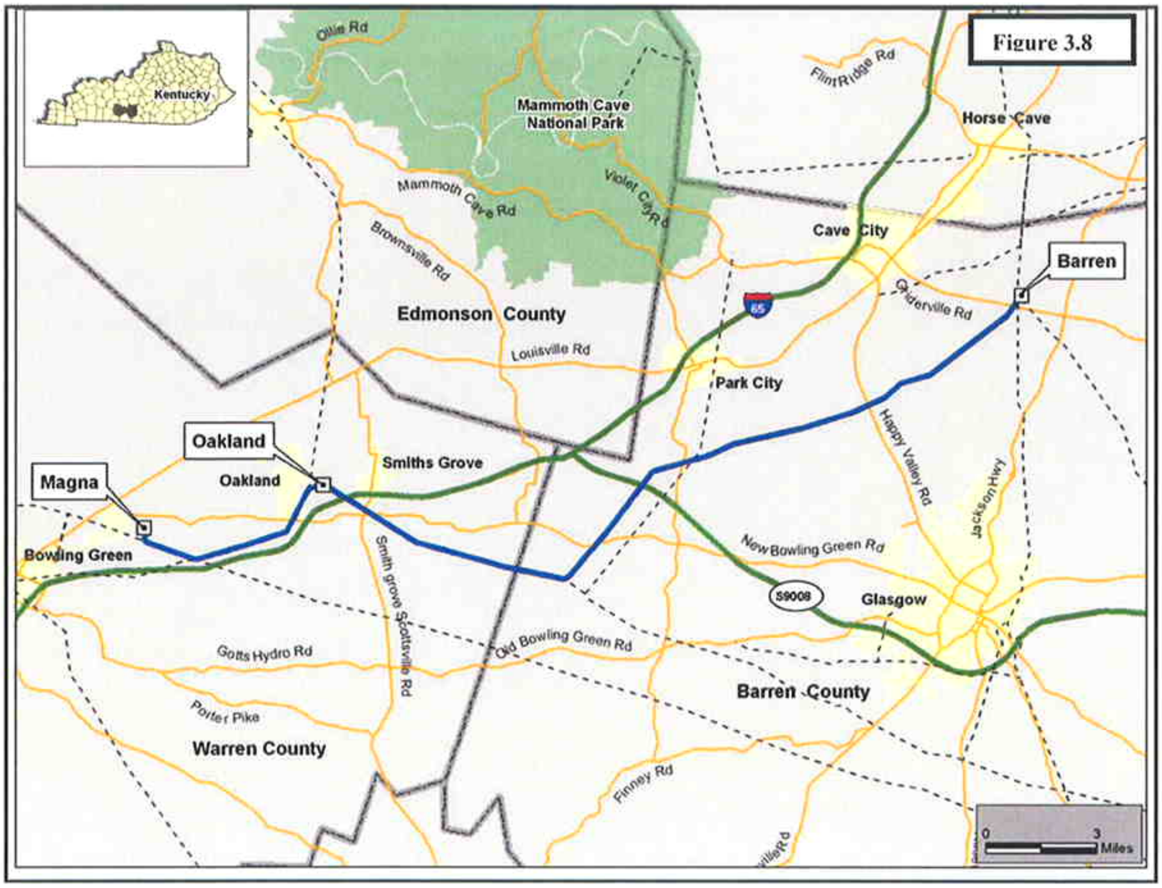


Figure 3.7c

3.8 Conclusion:

The combination of Route G from Barren to Oakland and Route B from Oakland to Magna is the preferred corridor. According to EKPC's internal process, this corridor is subject to refinement based on local input and more detailed data.



4 Wilson – Aberdeen – Morgantown

4.1 Macro Corridors:

The first step in this methodology is Macro Corridor creation, which defines an area for more detailed study. Typically for this stage, the best available land cover dataset based on 30m LandSat imagery is used. In the case of this area, the best available is from 1992.

The macro corridors identified an area approx. 136 sq miles including and northwest of Morgantown. The area is predominately rural with pockets of urbanized areas. Large areas of the study area are forested and abandoned strip mines. Agricultural areas are predominate along the Green River in the southern portion of the study area.

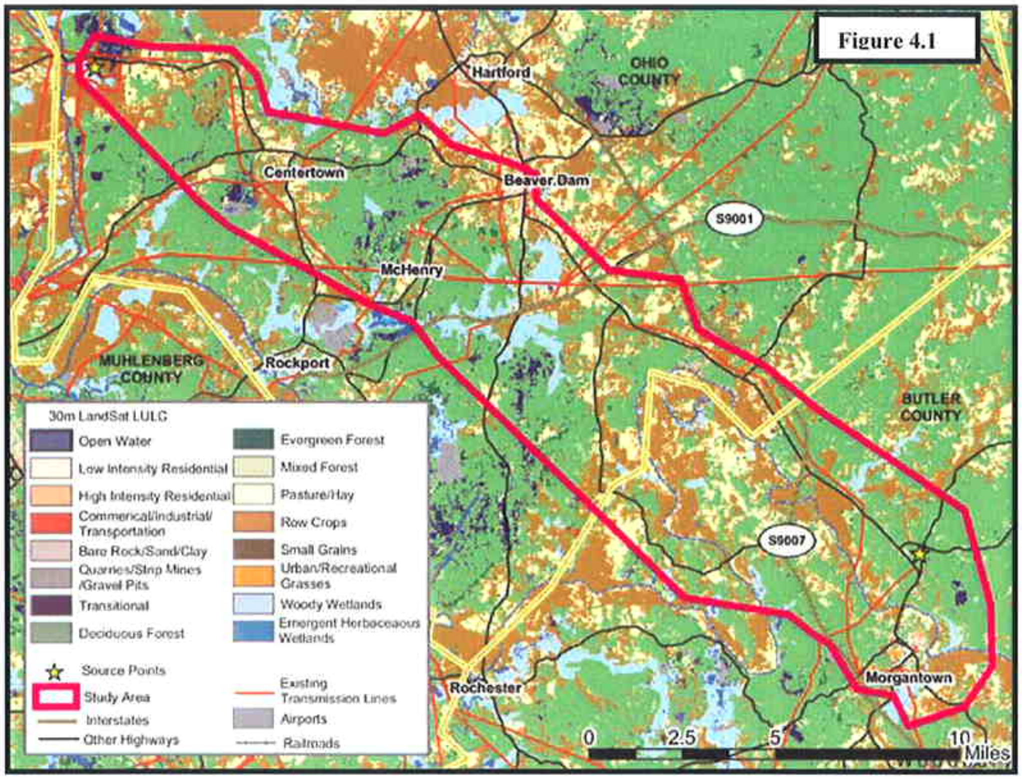


Figure 4.1

4.2 Alternative Corridors

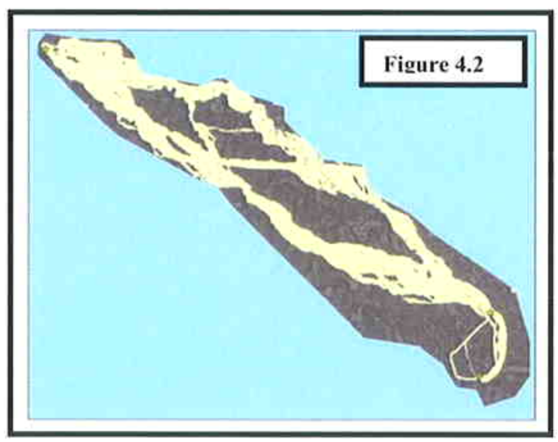


Figure 4.2

Once the Macro Corridors are identified, detailed datasets are developed for siting purposes. Weight and values are assigned to the datasets and alterative corridors are generated. In the Alternative Corridor phase, Wildlife Management Areas are typically considered a constraint due to their value as habitat and green space in the Natural Model. However, for this project the Wildlife Management Areas that exists are previously strip mine areas that no longer retain their natural qualities. It was determined by the routing team that these areas should not be considered as a constraint or an opportunity. Therefore, these areas were not represented in the Public Lands layer in the routing models.

4.2.1 Built Environment Corridor:

The Built Environment Corridor from Wilson to Aberdeen veers to the southwest side of the study area utilizing large areas of the rural sections of the study area. It takes advantage of the open agricultural areas along the Green River. However, it must cross the river twice.

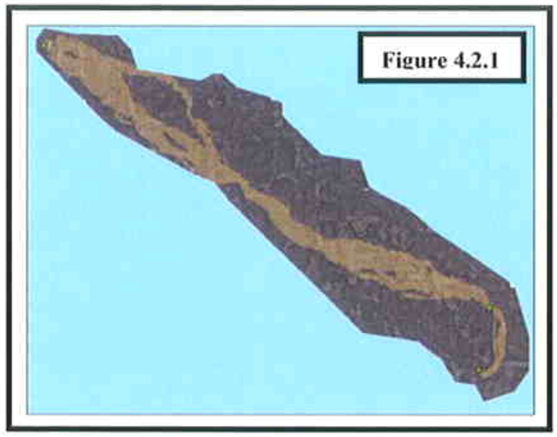


Figure 4.2.1

The Built Environment Corridor from Aberdeen to Morgantown utilizes forested and agricultural areas to the east of the town of Morgantown. It crosses the Green River at the bend on the southeast side of town.

4.2.2 Natural Environment Corridor:

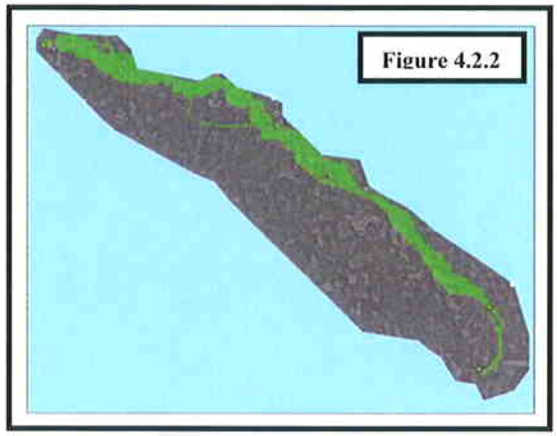


Figure 4.2.2

The Natural Corridor from Wilson to Aberdeen veers to the east side of the study area, locating in the more urbanized areas. It roughly parallels US Highway 231, passing Beaver Dam to the south, and roughly parallels several secondary highways to Wilson.

The Natural Corridor from Aberdeen to Morgantown follows a similar path as the built corridor; but is more limited to agricultural fields, creating a more defined corridor.

4.2.3 Engineering Concerns Corridor:

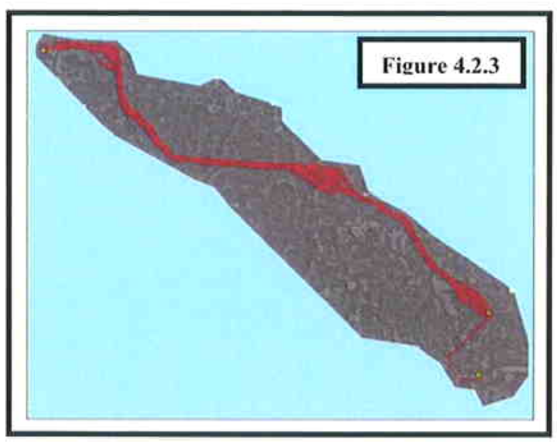


Figure 4.2.3

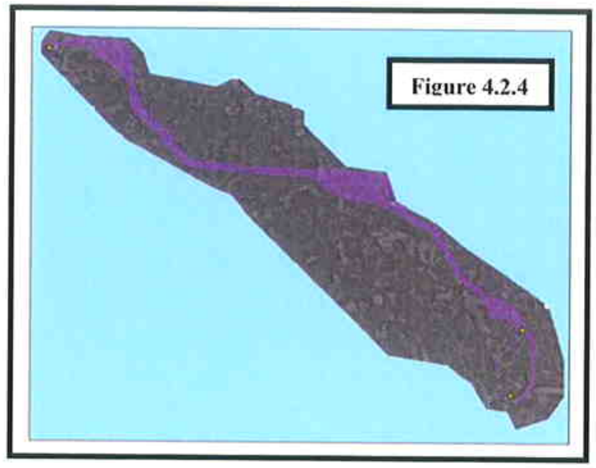
The Engineering Corridor from Wilson to Aberdeen utilizes existing transmission lines in the study area. It begins in the southeast section of the study area heading northwest. After approximately 12 miles, it turns almost due west for approx. 6 miles continuing to parallel existing transmission lines. Then the route heads towards Wilson in a northwest direction.

The Engineering Corridor from Aberdeen to Morgantown utilizes an existing transmission line corridor to the west of the town of Morgantown. The corridor passes through some urbanized areas.

4.2.4 Averaged Corridor:

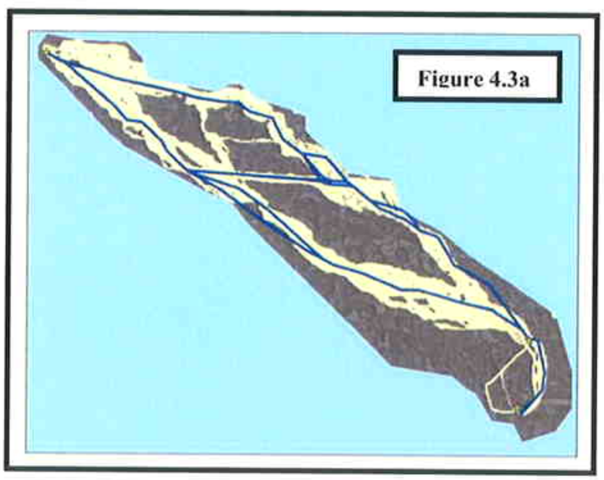
The Averaged Corridor from Wilson to Aberdeen mimics the Engineering Concerns Corridor.

The Averaged Corridor from Aberdeen to Morgantown takes a path similar to the Built and Natural Corridors. A minor path also developed to the west of Morgantown, passing through several urbanized areas.



4.3 Alternate Routes:

The siting team analyzed the alternate corridors and identified alternate routes within the alternate corridors. These alternate routes were compared using the route selection matrix documented in the siting methodology.



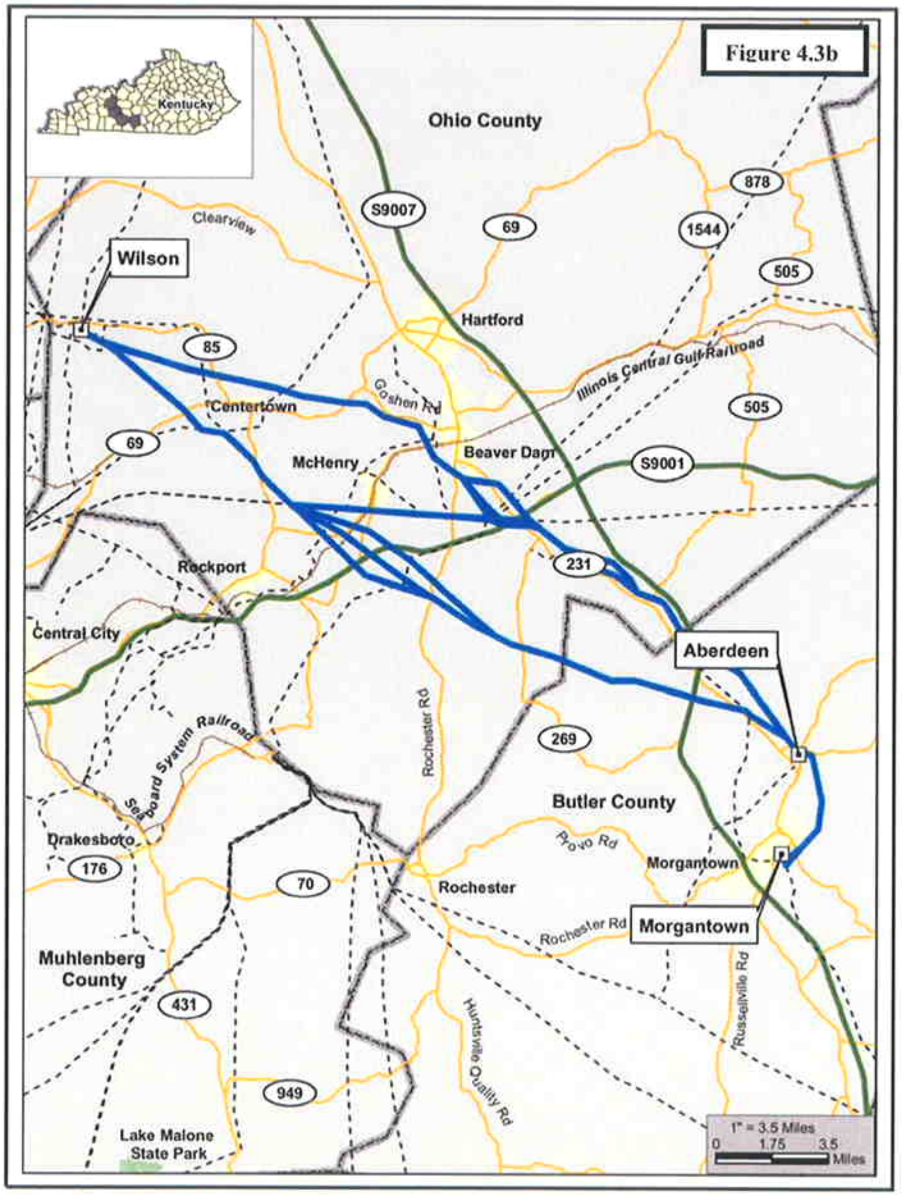


Figure 4.3b
Kentucky
Ohio County
S9007
69
878
1544
505
Clearview
Wilson
Hartford
85
Illinois Central Gulf Railroad
Centertown
Goshen Rd
505
69
McHenry
Beaver Dam
S9001
231
Rockport
Central City
Aberdeen
Seaboard System Railroad
Rochester Rd
269
Butler County
Drakesboro
Provo Rd
Morgantown
176
70
Rochester
Rochester Rd
Morgantown
Muhlenberg
County
431
Huntsville Quality Rd
Russellville Rd
949
1" = 3.5 Miles
0 1.75 3.5 Miles
Lake Malone
State Park

4.4 Alternate Route Statistics

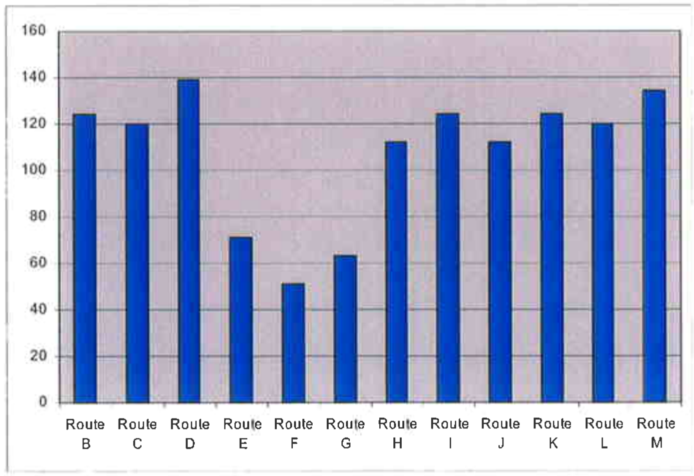
Raw Statistics and Normalized Statistics

Figure 4.4a

Built	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I	Route J	Route K	Route L	Route M
Feature	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 100' Corridor)	0	0	0	0	0	0	0	0	0	0	0	0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proximity to Residences (300')	11	10	13	6	1	2	18	18	22	22	18	18
Normalized	0.5	0.4	0.6	0.2	0.0	0.0	0.8	0.8	1.0	1.0	0.8	0.8
Proposed Developments	0	0	0	0	0	0	0	0	0	0	0	0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proximity to Commercial Buildings (300')	0	0	0	0	0	0	0	0	0	0	0	0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Proximity to Industrial Buildings (300')	1	1	1	1	1	1	1	1	1	1	1	1
Normalized	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
School, DayCare, Church, Cemetery, Park Parcels (#)	0	0	0	0	0	0	0	0	0	0	0	0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0	0	0	0	0	0	0	0	0	0	0	0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural												
Natural Forests (Acres)	119.9	114.5	156.5	90.8	75.8	87.2	132.5	144.1	132.3	143.3	126.7	135.4
Normalized	0.5	0.5	1.0	0.2	0.0	0.1	0.7	0.8	0.7	0.8	0.6	0.7
Stream/River Crossings	39	38	38	40	42	41	33	33	31	32	35	38
Normalized	0.7	0.6	0.6	0.8	1.0	0.9	0.2	0.2	0.0	0.1	0.4	0.5
Wetland Areas (Acres)	13.8	14.0	8.2	4.5	4.4	4.7	6.9	7.1	6.9	7.4	7.5	7.5
Normalized	1.0	1.0	0.4	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3
Floodplain Areas (Acres)	103.0	106.1	53.7	37.8	37.0	37.6	39.6	40.3	39.0	40.1	39.5	40.7
Normalized	1.0	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Engineering												
Length (Miles)	26.4	26.5	27.2	27.3	27.3	27.4	27.1	27.2	27.0	27.1	27.0	27.1
Normalized	0.0	0.1	0.8	0.9	0.9	1.0	0.7	0.8	0.6	0.7	0.6	0.7
Miles of Rebuild with Existing T/L*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Inverted	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Miles of Co-location with Existing T/L*	3.9	3.9	14.1	12.2	15.4	13.5	4.2	2.3	4.2	2.3	4.2	2.3
Normalized	0.1	0.1	0.9	0.8	1.0	0.8	0.1	0.0	0.1	0.0	0.1	0.0
Inverted	0.9	0.9	0.1	0.2	0.0	0.2	0.9	1.0	0.9	1.0	0.9	1.0
Miles of Co-location with Roads*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Normalized	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Inverted	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of Parcels	124	120	139	71	51	63	112	124	112	124	120	134
Normalized	0.8	0.8	1.0	0.2	0.0	0.1	0.7	0.8	0.7	0.8	0.8	0.9
Total Project Costs	$7,250,122	$7,265,660	$7,602,358	$7,567,275	$7,608,074	$7,565,439	$7,827,980	$7,785,323	$7,805,117	$7,761,710	$7,848,610	$7,812,160
Normalized	0.0	0.0	0.6	0.5	0.6	0.5	1.0	0.9	0.9	0.9	1.0	0.9

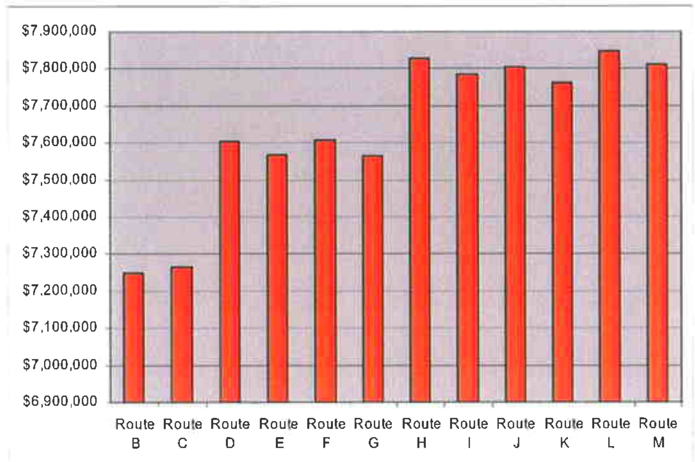
Number of Parcels Crossed

Figure 4.4b



Comparative Cost

Figure 4.4c



Alternative Route Selection Matrix
Emphasis on Built Environment

Figure 4.4d

Built	72%	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I	Route J	Route K	Route L	Route M
Feature		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 100' Corrido	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	87.9%	0.46	0.43	0.57	0.24	0.00	0.05	0.81	0.81	1.00	1.00	0.81	0.81
Weighted		0.42	0.38	0.50	0.21	0.00	0.04	0.71	0.71	0.88	0.88	0.71	0.71
Proposed Residential Developments	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Commercial Buildings (300')	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Industrial Buildings (300')	12.1%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Weighted		0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
School, DayCare, Church, Cemetery, Parl	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.54	0.50	0.62	0.33	0.12	0.16	0.83	0.83	1.00	1.00	0.83	0.83
WEIGHTED TOTAL		0.39	0.36	0.45	0.24	0.09	0.12	0.60	0.60	0.72	0.72	0.60	0.60
Natural	14%												
Natural Forests (Acres)	9.3%	0.55	0.48	1.00	0.19	0.00	0.14	0.70	0.85	0.70	0.84	0.63	0.74
Weighted		0.05	0.04	0.09	0.02	0.00	0.01	0.07	0.08	0.07	0.08	0.06	0.07
Stream/River Crossings	38.0%	0.73	0.64	0.64	0.82	1.00	0.91	0.18	0.18	0.00	0.09	0.36	0.45
Weighted		0.28	0.24	0.24	0.31	0.38	0.35	0.07	0.07	0.00	0.03	0.14	0.17
Wetland Areas (Acres)	40.3%	0.98	1.00	0.39	0.01	0.00	0.04	0.26	0.28	0.26	0.31	0.32	0.32
Weighted		0.39	0.40	0.16	0.00	0.00	0.01	0.11	0.11	0.11	0.13	0.13	0.13
Floodplain Areas (Acres)	12.4%	0.96	1.00	0.24	0.01	0.00	0.01	0.04	0.05	0.03	0.05	0.04	0.05
Weighted		0.12	0.12	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01
TOTAL	100.0%	0.84	0.81	0.52	0.33	0.38	0.37	0.24	0.26	0.17	0.24	0.33	0.38
WEIGHTED TOTAL		0.12	0.11	0.07	0.05	0.05	0.05	0.03	0.04	0.02	0.03	0.05	0.05
Engineering	14%												
Miles of Rebuild with Existing T/L*	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miles of Co-location with Existing T/L*	72.2%	0.88	0.88	0.10	0.25	0.00	0.15	0.85	1.00	0.85	1.00	0.85	1.00
Weighted		0.64	0.64	0.07	0.18	0.00	0.11	0.62	0.72	0.62	0.72	0.62	0.72
Miles of Co-location with Roads*	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Costs	27.8%	0.00	0.03	0.59	0.53	0.60	0.53	0.97	0.89	0.93	0.85	1.00	0.94
Weighted		0.00	0.01	0.16	0.15	0.17	0.15	0.27	0.25	0.26	0.24	0.28	0.26
TOTAL	100.0%	0.64	0.64	0.24	0.33	0.17	0.26	0.88	0.97	0.87	0.96	0.89	0.98
WEIGHTED TOTAL		0.09	0.09	0.03	0.05	0.02	0.04	0.12	0.14	0.12	0.13	0.13	0.14
SUM OF WEIGHTED TOTALS		0.60	0.56	0.56	0.33	0.16	0.21	0.76	0.77	0.87	0.89	0.77	0.79
RANK		6	5	4	3	1	2	7	9	11	12	8	10

Alternative Route Selection Matrix
Emphasis on Engineering Concerns

Figure 4.4e

Built	14%	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I	Route J	Route K	Route L	Route M
Feature		**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**
Relocated Residences (within 100' Corrido	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	87.9%	0.48	0.43	0.57	0.24	0.00	0.05	0.81	0.81	1.00	1.00	0.81	0.81
Weighted		0.42	0.38	0.50	0.21	0.00	0.04	0.71	0.71	0.88	0.88	0.71	0.71
Proposed Residential Developments	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Commercial Buildings (300')	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Industrial Buildings (300')	12.1%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Weighted		0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
School, DayCare, Church, Cemetery, Park	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.54	0.50	0.62	0.33	0.12	0.16	0.83	0.83	1.00	1.00	0.83	0.83
WEIGHTED TOTAL		0.08	0.07	0.09	0.05	0.02	0.02	0.12	0.12	0.14	0.14	0.12	0.12
Natural	14%												
Natural Forests (Acres)	9.3%	0.55	0.48	1.00	0.19	0.00	0.14	0.70	0.85	0.70	0.84	0.63	0.74
Weighted		0.05	0.04	0.09	0.02	0.00	0.01	0.07	0.08	0.07	0.08	0.06	0.07
Stream/River Crossings	38.0%	0.73	0.64	0.64	0.82	1.00	0.91	0.18	0.18	0.00	0.09	0.36	0.45
Weighted		0.28	0.24	0.24	0.31	0.38	0.35	0.07	0.07	0.00	0.03	0.14	0.17
Wetland Areas (Acres)	40.3%	0.98	1.00	0.39	0.01	0.00	0.04	0.26	0.28	0.26	0.31	0.32	0.32
Weighted		0.39	0.40	0.16	0.00	0.00	0.01	0.11	0.11	0.11	0.13	0.13	0.13
Floodplain Areas (Acres)	12.4%	0.96	1.00	0.24	0.01	0.00	0.01	0.04	0.05	0.03	0.05	0.04	0.05
Weighted		0.12	0.12	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01
TOTAL	100.0%	0.84	0.81	0.52	0.33	0.38	0.37	0.24	0.26	0.17	0.24	0.33	0.38
WEIGHTED TOTAL		0.12	0.11	0.07	0.05	0.05	0.05	0.03	0.04	0.02	0.03	0.05	0.05
Engineering	72%												
Miles of Rebuild with Existing T/L*	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miles of Co-location with Existing T/L*	72.2%	0.88	0.88	0.10	0.25	0.00	0.15	0.85	1.00	0.85	1.00	0.85	1.00
Weighted		0.64	0.64	0.07	0.18	0.00	0.11	0.62	0.72	0.62	0.72	0.62	0.72
Miles of Co-location with Roads*	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Costs	27.8%	0.00	0.03	0.59	0.53	0.60	0.53	0.97	0.89	0.93	0.85	1.00	0.94
Weighted		0.00	0.01	0.16	0.15	0.17	0.15	0.27	0.25	0.26	0.24	0.28	0.26
TOTAL	100.0%	0.64	0.64	0.24	0.33	0.17	0.26	0.88	0.97	0.87	0.96	0.89	0.98
WEIGHTED TOTAL		0.46	0.46	0.17	0.23	0.12	0.18	0.64	0.70	0.63	0.69	0.64	0.71
SUM OF WEIGHTED TOTALS		0.65	0.65	0.33	0.33	0.19	0.26	0.79	0.85	0.79	0.86	0.81	0.88
RANK		6	5	4	3	1	2	7	10	8	11	9	12

Alternative Route Selection Matrix
Emphasis on Natural Environment

Figure 4.4f

PHOTO SCIENCE Geospatial Solutions

EAST KENTUCKY POWER COOPERATIVE

Built	14%	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I	Route J	Route K	Route L	Route M
Feature		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within100' Corridor	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	87.9%	0.48	0.43	0.57	0.24	0.00	0.05	0.81	0.81	1.00	1.00	0.81	0.81
Weighted		0.42	0.38	0.50	0.21	0.00	0.04	0.71	0.71	0.88	0.88	0.71	0.71
Proposed Residential Developments	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Commercial Buildings (300')	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Industrial Buildings (300')	12.1%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Weighted		0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
School, DayCare, Church, Cemetery, Park	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.54	0.50	0.62	0.33	0.12	0.16	0.83	0.83	1.00	1.00	0.83	0.83
WEIGHTED TOTAL		0.08	0.07	0.09	0.05	0.02	0.02	0.12	0.12	0.14	0.14	0.12	0.12
Natural	72%												
Natural Forests (Acres)	9.3%	0.55	0.48	1.00	0.19	0.00	0.14	0.70	0.85	0.70	0.84	0.63	0.74
Weighted		0.05	0.04	0.09	0.02	0.00	0.01	0.07	0.08	0.07	0.08	0.06	0.07
Stream/River Crossings	38.0%	0.73	0.64	0.64	0.82	1.00	0.91	0.18	0.18	0.00	0.09	0.36	0.45
Weighted		0.28	0.24	0.24	0.31	0.38	0.35	0.07	0.07	0.00	0.03	0.14	0.17
Wetland Areas (Acres)	40.3%	0.98	1.00	0.39	0.01	0.00	0.04	0.26	0.28	0.26	0.31	0.32	0.32
Weighted		0.39	0.40	0.16	0.00	0.00	0.01	0.11	0.11	0.11	0.13	0.13	0.13
Floodplain Areas (Acres)	12.4%	0.96	1.00	0.24	0.01	0.00	0.01	0.04	0.05	0.03	0.05	0.04	0.05
Weighted		0.12	0.12	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01
TOTAL	100.0%	0.84	0.81	0.52	0.33	0.38	0.37	0.24	0.26	0.17	0.24	0.33	0.38
WEIGHTED TOTAL		0.60	0.59	0.38	0.24	0.27	0.27	0.18	0.19	0.13	0.18	0.24	0.27
Engineering	14%												
Miles of Rebuild with Existing T/L*	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miles of Co-location with Existing T/L*	72.2%	0.88	0.88	0.10	0.25	0.00	0.15	0.85	1.00	0.85	1.00	0.85	1.00
Weighted		0.64	0.64	0.07	0.18	0.00	0.11	0.62	0.72	0.62	0.72	0.62	0.72
Miles of Co-location with Roads*	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Costs	27.8%	0.00	0.03	0.59	0.53	0.60	0.53	0.97	0.89	0.93	0.85	1.00	0.94
Weighted		0.00	0.01	0.16	0.15	0.17	0.15	0.27	0.25	0.26	0.24	0.28	0.26
TOTAL	100.0%	0.64	0.64	0.24	0.33	0.17	0.26	0.88	0.97	0.87	0.96	0.89	0.98
WEIGHTED TOTAL		0.09	0.09	0.03	0.05	0.02	0.04	0.12	0.14	0.12	0.13	0.13	0.14
SUM OF WEIGHTED TOTALS		0.77	0.75	0.50	0.33	0.31	0.33	0.42	0.44	0.39	0.45	0.48	0.53
RANK		12	11	9	3	1	2	5	6	4	7	8	10

Alternative Route Selection Matrix
Equal Consideration of Categories

Figure 4.4g

PHOTO SCIENCE Geospatial Solutions

EAST KENTUCKY POWER COOPERATIVE

Built	33%	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I	Route J	Route K	Route L	Route M
Feature		Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Relocated Residences (within 75' Corridor)	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	87.9%	0.48	0.43	0.57	0.24	0.00	0.05	0.81	0.81	1.00	1.00	0.81	0.81
Weighted		0.42	0.38	0.50	0.21	0.00	0.04	0.71	0.71	0.88	0.88	0.71	0.71
Proposed Residential Developments	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Commercial Buildings (300')	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Industrial Buildings (300')	12.1%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Weighted		0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
School, DayCare, Church, Cemetery, Park	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.54	0.50	0.62	0.33	0.12	0.16	0.83	0.83	1.00	1.00	0.83	0.83
WEIGHTED TOTAL		0.18	0.16	0.21	0.11	0.04	0.05	0.27	0.27	0.33	0.33	0.27	0.27
Natural	33%												
Natural Forests (Acres)	9.3%	0.55	0.48	1.00	0.19	0.00	0.14	0.70	0.85	0.70	0.84	0.63	0.74
Weighted		0.05	0.04	0.09	0.02	0.00	0.01	0.07	0.08	0.07	0.08	0.06	0.07
Stream/River Crossings	38.0%	0.73	0.64	0.64	0.82	1.00	0.91	0.18	0.18	0.00	0.09	0.36	0.45
Weighted		0.28	0.24	0.24	0.31	0.38	0.35	0.07	0.07	0.00	0.03	0.14	0.17
Wetland Areas (Acres)	40.3%	0.98	1.00	0.39	0.01	0.00	0.04	0.26	0.28	0.26	0.31	0.32	0.32
Weighted		0.39	0.40	0.16	0.00	0.00	0.01	0.11	0.11	0.11	0.13	0.13	0.13
Floodplain Areas (Acres)	12.4%	0.96	1.00	0.24	0.01	0.00	0.01	0.04	0.05	0.03	0.05	0.04	0.05
Weighted		0.12	0.12	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01
TOTAL	100.0%	0.84	0.81	0.52	0.33	0.38	0.37	0.24	0.26	0.17	0.24	0.33	0.38
WEIGHTED TOTAL		0.28	0.27	0.17	0.11	0.13	0.12	0.08	0.09	0.06	0.08	0.11	0.12
Engineering	33%												
Miles of Rebuild with Existing T/L*	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miles of Co-location with Existing T/L*	72.2%	0.88	0.88	0.10	0.25	0.00	0.15	0.85	1.00	0.85	1.00	0.85	1.00
Weighted		0.64	0.64	0.07	0.18	0.00	0.11	0.62	0.72	0.62	0.72	0.62	0.72
Miles of Co-location with Roads*	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Costs	27.8%	0.00	0.03	0.59	0.53	0.60	0.53	0.97	0.89	0.93	0.85	1.00	0.94
Weighted		0.00	0.01	0.16	0.15	0.17	0.15	0.27	0.25	0.26	0.24	0.28	0.26
TOTAL	100.0%	0.64	0.64	0.24	0.33	0.17	0.26	0.88	0.97	0.87	0.96	0.89	0.98
WEIGHTED TOTAL		0.21	0.21	0.08	0.11	0.05	0.08	0.29	0.32	0.29	0.32	0.30	0.32
SUM OF WEIGHTED TOTALS		0.67	0.65	0.46	0.33	0.22	0.26	0.65	0.68	0.68	0.73	0.68	0.72
RANK		7	5	4	3	1	2	6	10	8	12	9	11

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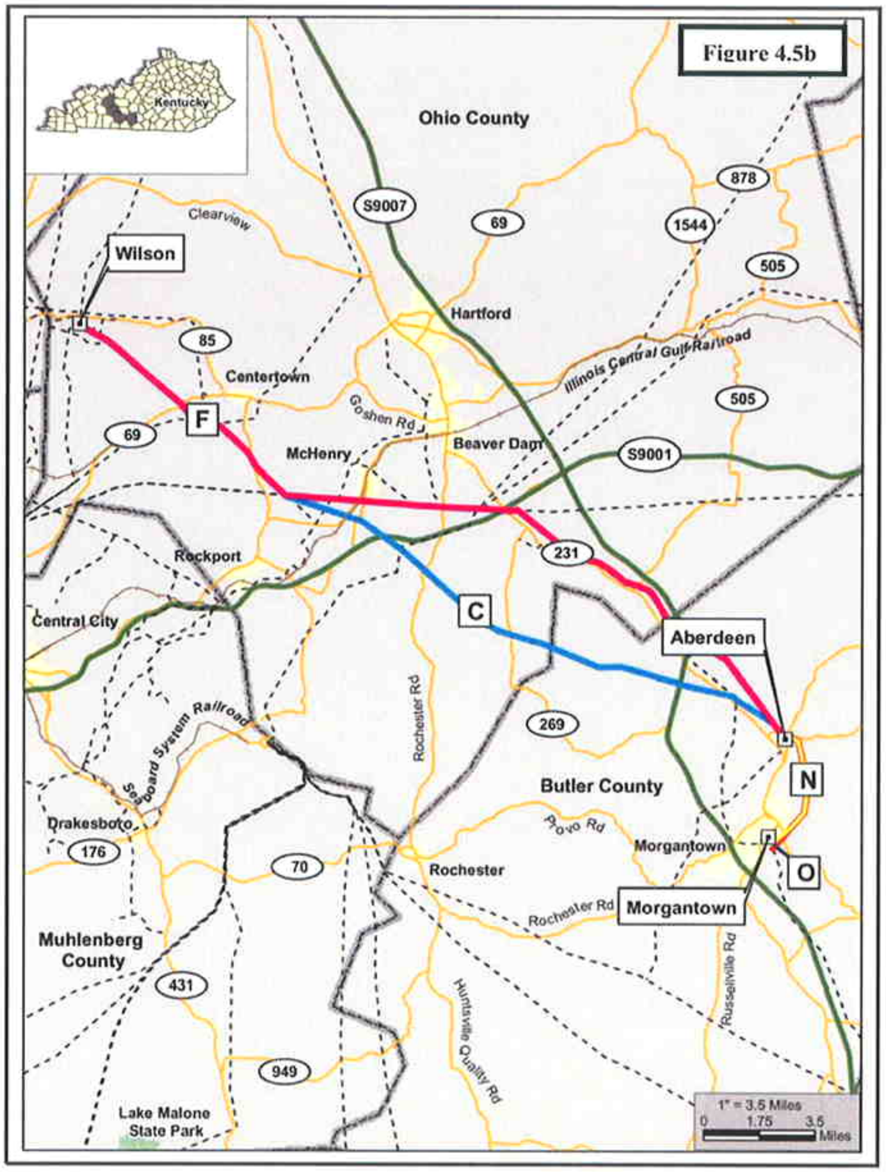
4.5 Top Routes from Wilson - Aberdeen:

Three distinct corridors of routes developed during the Alternative Corridor phase from Wilson to Aberdeen. The most suitable routes were further analyzed by the routing team.

Figure 4.5a

		Southern Corridor Alternative Routes		Maximizes Existing Transmission Line Alternative Routes				Northern Corridor Alternative Routes					
Built	33%	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Route I	Route J	Route K	Route L	Route M
Feature		**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**	**Unit**
Relocated Residences (within 75' Corridor)	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Residences (300')	87.9%	0.48	0.43	0.57	0.24	0.00	0.05	0.81	0.81	1.00	1.00	0.81	0.81
Weighted		0.42	0.38	0.50	0.21	0.00	0.04	0.71	0.71	0.88	0.88	0.71	0.71
Proposed Residential Developments	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Commercial Buildings (300')	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Proximity to Industrial Buildings (300')	12.1%	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Weighted		0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
School, DayCare, Church, Cemetery, Park	0.0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	100.0%	0.54	0.50	0.62	0.33	0.12	0.16	0.83	0.83	1.00	1.00	0.83	0.83
WEIGHTED TOTAL		0.18	0.16	0.21	0.11	0.04	0.05	0.27	0.27	0.33	0.33	0.27	0.27
Natural	33%												
Natural Forests (Acres)	9.3%	0.55	0.48	1.00	0.19	0.00	0.14	0.70	0.85	0.70	0.84	0.63	0.74
Weighted		0.05	0.04	0.09	0.02	0.00	0.01	0.07	0.08	0.07	0.08	0.06	0.07
Stream/River Crossings	38.0%	0.73	0.64	0.64	0.82	1.00	0.91	0.18	0.18	0.00	0.09	0.36	0.45
Weighted		0.28	0.24	0.24	0.31	0.38	0.35	0.07	0.07	0.00	0.03	0.14	0.17
Wetland Areas (Acres)	40.3%	0.98	1.00	0.39	0.01	0.00	0.04	0.26	0.28	0.26	0.31	0.32	0.32
Weighted		0.39	0.40	0.16	0.00	0.00	0.01	0.11	0.11	0.11	0.13	0.13	0.13
Floodplain Areas (Acres)	12.4%	0.96	1.00	0.24	0.01	0.00	0.01	0.04	0.05	0.03	0.05	0.04	0.05
Weighted		0.12	0.12	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01
TOTAL	100.0%	0.84	0.81	0.52	0.33	0.38	0.37	0.24	0.26	0.17	0.24	0.33	0.38
WEIGHTED TOTAL		0.28	0.27	0.17	0.11	0.13	0.12	0.08	0.09	0.06	0.08	0.11	0.12
Engineering	33%												
Miles of Rebuild with Existing T/L*	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Miles of Co-location with Existing T/L*	72.2%	0.88	0.88	0.10	0.25	0.00	0.15	0.85	1.00	0.85	1.00	0.85	1.00
Weighted		0.64	0.64	0.07	0.18	0.00	0.11	0.62	0.72	0.62	0.72	0.62	0.72
Miles of Co-location with Roads*	0.0%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weighted		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Project Costs	27.8%	0.00	0.03	0.59	0.53	0.60	0.53	0.97	0.89	0.93	0.85	1.00	0.94
Weighted		0.00	0.01	0.16	0.15	0.17	0.15	0.27	0.25	0.26	0.24	0.28	0.26
TOTAL	100.0%	0.64	0.64	0.24	0.33	0.17	0.26	0.88	0.97	0.87	0.96	0.89	0.98
WEIGHTED TOTAL		0.21	0.21	0.08	0.11	0.05	0.08	0.29	0.32	0.29	0.32	0.30	0.32
SUM OF WEIGHTED TOTALS		0.67	0.65	0.46	0.33	0.22	0.26	0.65	0.68	0.68	0.73	0.68	0.72
RANK		7	5	4	3	1	2	6	10	8	12	9	11



4.5.1 Route C:

Route C mimics the Built Corridor. It begins cross country heading in a west northwest direction, crossing agricultural areas. After crossing the Green River twice, the land cover turns more to forest. After 18 miles of heading cross country; Route C parallels an existing transmission line for 3 miles. At which point, the route is again a cross country corridor until reaching the Wilson area.

4.5.2 Route F:

Route F mimics the Engineering Corridor. It parallels existing transmission lines almost the entire path to Wilson. It meets Route C where Route C begins to co-locate with an existing line and shares the same path until reaching Wilson.

4.6 Expert Judgment:

In the Expert Judgment section the routing team gave the most weight to Community Issues and Schedule Delay Risks. They gave a lower weight to Visual Issues, Special Permit Issues, and Construction and Maintenance Accessibility.

Route C was given low impact scores to Visual Issues, Community Issues, and Schedule Delay Risk. The primary reason for the low impact score in these categories is the rural nature of this route. Additional statistics were created showing that less buildings were within 1000' proximity than the other routes.

This route received medium impact scores in Special Permits issues and Construction and Maintenance Accessibility. The medium score for Special Permit Issues was given due to the crossing of the Green River twice and crossing previously strip mined areas. It was given a medium impact score in Construction and Maintenance Accessibility due to the amount of new cross country segments.

Route F was given low impact scores for Visual Issues, Special Permits, and Construction and Maintenance Accessibility. It received low impact scores in these areas due to the co-location with existing transmission lines and low impact to the natural environment. It received a medium impact score to Schedule Delay Risk and a high impact score in Community Issues, primarily due to crossing through the most urbanized areas of the study area.

Figure 4.6

EXPERT JUDGEMENT	1 = Low Impact 2 = Medium Impact 3 = High Impact		
	Per Project	Route C	Route F
Visual Issues	10%	1	1
Weighted		0.1	0.1
Community Issues	35%	1	3
Weighted		0.35	1.05
Schedule Delay Risk	35%	1	2
Weighted		0.35	0.7
Special Permit Issues	10%	2	1
Weighted		0.2	0.1
Construction/ Maintenance Accessability	10%	2	1
Weighted		0.2	0.1
TOTAL			
	100%	1.2	2.05

4.7 Alternative Routes from Aberdeen to Morgantown:

Two similar routes were studied from Aberdeen to Morgantown. These routes fell into the corridors produced by three of the four models: Built Environment, Natural Environment, and Averaged Model. Route N scored better than Route O in all categories. However, statistically the difference between the two was very minor. The deciding factor was a greater amount of forested wetlands at the tap area of Route O.

Figure 4.7a

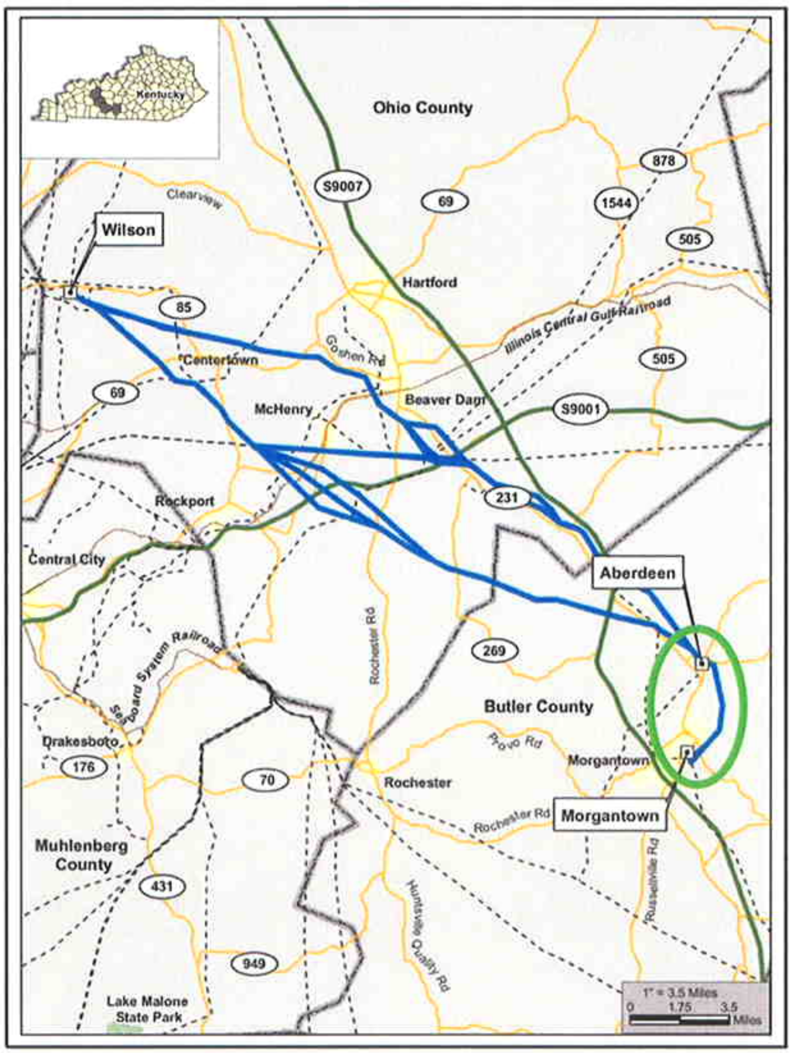
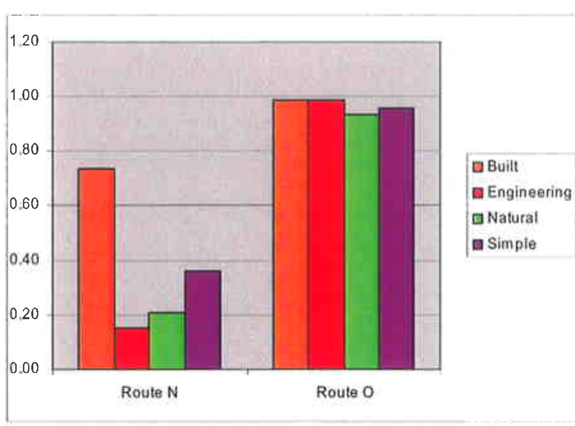


Figure 4.7b

Raw Statistics and Normalized Statistics

Built	Route N	Route O
Feature	Unit	Unit
Relocated Residences (within 100' Corridor)	0	0
Normalized	0.0	0.0
Proximity to Residences (300')	5	5
Normalized	1.0	1.0
Proposed Developments	0	0
Normalized	0.0	0.0
Proximity to Commercial Buildings (300')	0	0
Normalized	0.0	0.0
Proximity to Industrial Buildings (300')	0	0
Normalized	0.0	0.0
School, DayCare, Church, Cemetery, Park Parcels (#)	1	1
Normalized	1.0	1.0
NRHP Listed/Eligible Strucs./Districts (1500' from edge of R/W)	0	0
Normalized	0.0	0.0
Natural		
Natural Forests (Acres)	25.7	23.4
Normalized	1.0	0.0
Stream/River Crossings	4	6
Normalized	0.0	1.0
Wetland Areas (Acres)	0.6	0.7
Normalized	0.0	1.0
Floodplain Areas (Acres)	19.6	23.6
Normalized	0.0	1.0
Engineering		
Length (Miles)	4.16	4.22
Normalized	0.0	1.0
Miles of Rebuild with Existing T/L*	0.0	0.0
Normalized	0.0	0.0
Inverted	0.0	0.0
Miles of Co-location with Existing T/L*	0.0	0.0
Normalized	0.0	0.0
Inverted	0.0	0.0
Miles of Co-location with Roads*	0.0	0.0
Normalized	0.0	0.0
Inverted	0.0	0.0
Number of Parcels	17	15
Normalized	1.0	0.0
Total Project Costs	$1,195,037	$1,201,098
Normalized	0.0	1.0

Figure 4.7c



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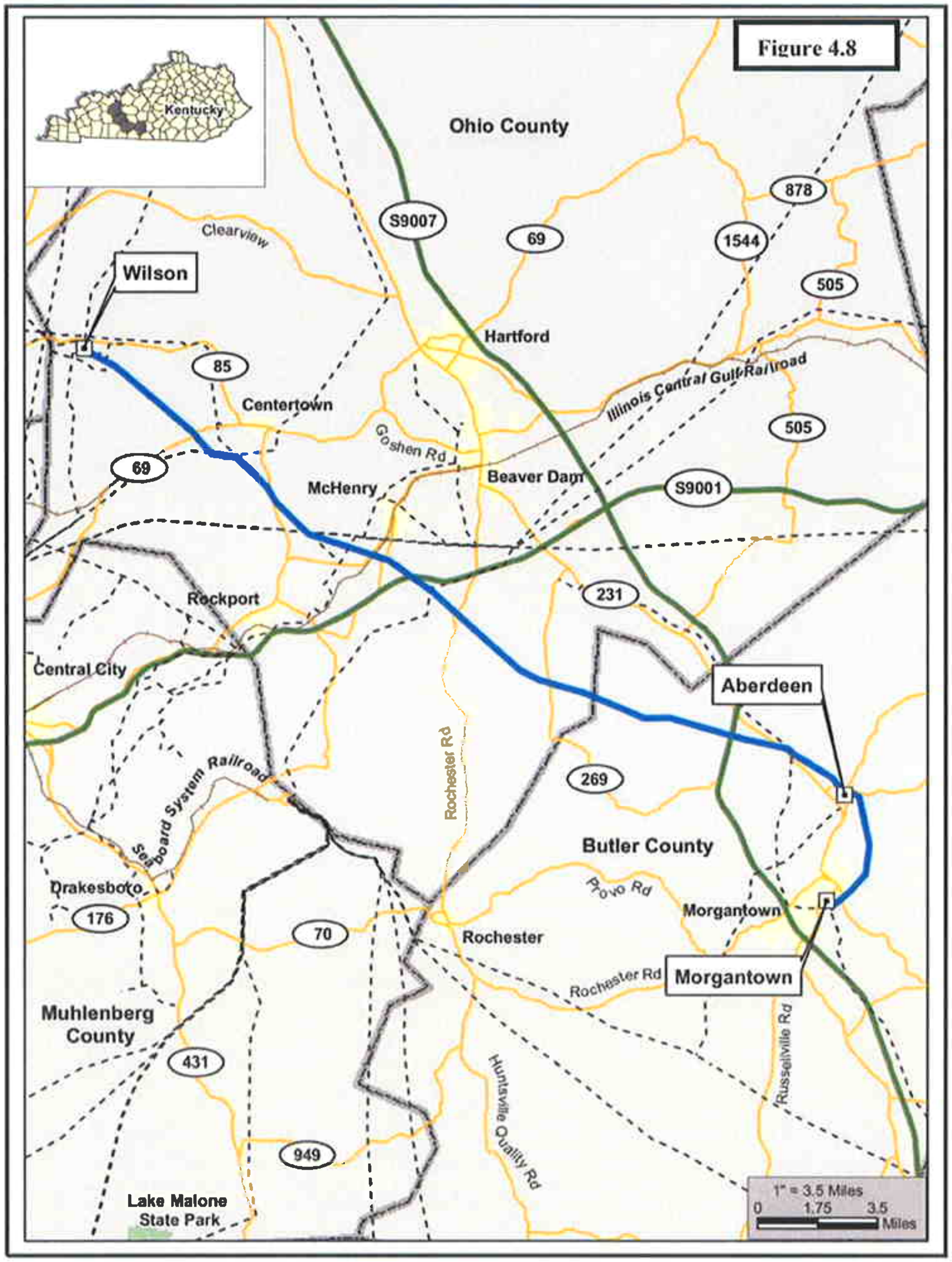
4.8 Conclusion:

The combination of Route C and Route N is the preferred corridor. According to EKPC's internal process, this corridor is subject to refinement based on local input and more detailed data.



APPENDIX E
MIST NETTING SURVEY REPORT

Mist Netting Survey for the Federally Endangered Indiana Bat (*Myotis sodalis*) along the Proposed General Motors-Memphis Junction 161 kV Transmission Line Warren County, KY

Prepared for:

U.S. Fish and Wildlife Service
Kentucky Field Office
Frankfort, KY

Prepared by:

East Kentucky Power Cooperative
Natural Resources and Environmental Communications
Winchester, KY

August 2005

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INTRODUCTION

In April 2008, Warren Rural Electric Cooperative Corporation (RECC), located in Bowling Green, KY, will join East Kentucky Power Cooperative (EKPC) as a member electric distribution cooperative. Warren RECC currently receives its electricity from Tennessee Valley Authority (TVA) and is not connected to the EKPC power grid. Therefore, transmission lines must be constructed and rebuilt to tie Warren RECC into the power grid and allow them to receive electricity from EKPC.

One of these transmission lines is a proposed 161 kilovolt (kV) transmission line in Warren County, KY (Figure 1). The line begins at the East Bowling Green/General Motors substation northeast of Bowling Green and ends at the Memphis Junction substation, located southwest of Memphis Junction. The proposed transmission line would cross the Bristow, Bowling Green North, Bowling Green South, and Rockfield USGS 7.5 minute topographic quadrangles.

Because the proposed transmission project will require the clearing of some trees, the Indiana Bat Revised Recovery Plan (USFWS 1999) (Appendix IV) requires that a mist netting survey be conducted for the endangered Indiana bat (*Myotis sodalis*). The clearing of trees during the summer months raises questions and concerns for the welfare of the Indiana bat and its summer habitat. In accordance with United States Fish and Wildlife Service (USFWS) guidelines, a mist-netting proposal was prepared and submitted to the Frankfort Field Office on 11 July 2005. The USFWS reviewed this proposal, and in an email dated 1 August 2005, stated that the survey plan was adequate to determine presence or probable absences of the Indiana Bat within the proposed project area. A copy of this proposal can be found in Appendix V.

After receiving concurrence on the mist-netting proposal from USFWS, EKPC conducted a mist-netting survey according to the Indiana Bat Revised Recovery Plan (USFWS 1999), to determine the presence or probable absence of the Indiana bat along the proposed corridor.

SPECIES STATUS

Distribution

Miller and Allen (1928) described a new species to science, the Indiana bat (*Myotis sodalis*), in 1928, and this species formally attained endangered species status March 11, 1967. Its distribution is in the eastern United States, from Oklahoma, Iowa, and Wisconsin east to Vermont, and south to northwestern Florida (Barbour and Davis 1969). In Kentucky, the Indiana bat's wintering distribution is fairly well documented and includes several caves throughout the karst regions of the state (Palmer-Ball et al. 1988). Kentucky contains three Priority One hibernacula (Priority One hibernacula are hibernation sites with a recorded population >30,000 bats since 1960) and houses a significant portion of the total population of Indiana bats (USFWS 1999).

For the proposed project, the closest known hibernacula are located in Warren and Barren Counties. In Warren County, a cave in the Bowling Green North Quadrangle and another in the Smiths Grove Quadrangle have historically contained small numbers of hibernating Indiana bats. The Barren County record is from Indian Cave along KY 70 near Mammoth Cave National Park. This cave once had about two-dozen Indiana bats hibernating in it and has been gated, but since then no bats have been found using the cave. Neither of these caves will be affected by the proposed transmission line.

Life History

Indiana bats use caves and abandoned mine portals as hibernacula. After hibernation, females leave the hibernacula and typically fly north and northwest to nursery sites to raise their young. Although some males may leave with the females, others stay near or in the hibernacula throughout the summer months (Barbour and Davis 1969). After leaving the hibernacula, Indiana bats are known to roost under the exfoliating bark of dead and live trees (MacGregor et al. 1999), and they have been documented using tree cavities as well (Garner et al. 1991).

It has also been shown that Indiana bats exhibit fidelity for summer roost trees (Garner and Gardner 1992). Early studies indicated that floodplain forests were the significant habitat for Indiana bats (Humphrey et al. 1977), but recent studies indicate that this species uses both upland and riparian habitats (MacGregor et al. 1999, Garner et al. 1991). Most known maternity roosts have been located in wooded areas with a semi-open canopy or along forest edges. Maternity colonies are initially composed of 50-100 females, each of which bears one young in May or June. Maternity colonies typically roost under the exfoliating bark of dead or live trees, but they have also been found to use cavities as temporary roosts (Callahan 1993, Garner et al. 1991).

The closest maternity roost record to the project area is located in Edmonson County, in the proximity of Mammoth Cave National Park, approximately 23 km from the nearest point of the proposed corridor. A maternity roost is also documented for Logan County, but it is attributed to a single juvenile male that was caught there during the maternity season. Indiana bats have also been recorded in Warren County, as well as the adjacent counties of Barren, Allen, and Hart. The summer distribution of this species in Kentucky is not well known, but expanded mist netting efforts by numerous biologists are increasing this knowledge base.

PROJECT DESCRIPTION AND LOCATION

The proposed transmission line would be located in Warren County, KY and would be approximately 24.5 km (15.21 miles) in length (Figure 1). Construction of the new line would involve the rebuilding of a 8.3 km (5.17 mile) section of existing double circuit 69 kV transmission line and a 5.5 km (3.39 mile) section of existing single circuit 69 kV transmission line, both supported by single wood pole structures on existing 100 ft wide rights-of-way (ROWs). The existing lines within these two sections would be dismantled and replaced by the proposed new transmission line. The proposed new line would be located on the existing 100 ft wide ROWs within these two sections and would not require any additional ROW width. The balance of the proposed new line would be new construction, 3.9 km (2.41 miles) of which would require a new 100 ft wide ROW and would parallel an existing electric transmission line, and 6.8 km (4.24 miles) of which would require a new 100 foot wide ROW, 50 feet of which would be shared with another proposed new electric transmission line. The ROW for the proposed transmission line would encompass approximately 184.4 acres of land, of which 118.4 acres would utilize existing ROWs.

The proposed line would begin at the East Bowling Green/ General Motors Substation northeast of Bowling Green and travel west along the northern edge of the city (Figure1). It would then turn southwest after the third Barren River crossing and extend to just east of Blue Level. At this point, the line would travel south and end at the Memphis Junction Substation, located southwest of Memphis Junction.

The project area lies in the Mississippian Plateaus region in south-central Kentucky, and is characterized by gently rolling hills, sinkholes and isolated knobs (McGrain and Currens 1978). The forest in this area is primarily made up of second and third-growth oak-hickory forest, with shagbark hickory (*Carya ovata*), white oak (*Quercus alba*), southern red oak (*Quercus falcata*), sugar maple (*Acer saccharum*), and tulip poplar (*Liriodendron tulipifera*) as the dominant species.

For the proposed project, approximately 3.3 km (2.1 miles) contains forested area. These forested areas consist of small patches of woods on ridge tops or along the Barren River and its tributaries. The upland forests are typical of second and third-growth oak-hickory forests and the riparian zones contain species commonly present in bottomland hardwood forests. Common tree species in the riparian areas are sycamore (*Platanus occidentalis*), box elder (*Acer negundo*), hackberry (*Celtis occidentalis*), and silver maple (*Acer saccharinum*). The rest of the proposed corridor is primarily used for agricultural, residential, and commercial purposes.

Because the proposed corridor extends through forested areas, the cutting of trees and other vegetation will be required. EKPC has determined that clearing would be required on approximately 17 percent of the proposed route for the new electric line. The proposed ROW would be cut through a combination of manual and mechanical means, and would be maintained through a combination of manual and mechanical cutting along with the ground application of approved herbicides.

The new transmission line would be supported by 195 single, H-frame double, and H-frame triple Corten tubular steel pole structures that would range in height from 95 to 100 feet aboveground. The average span between support structures would be 600 feet. The proposed new transmission line would be constructed to double circuit specifications but would be operated as a single circuit line until the electric load in the area warrants operation of the second circuit. Access for the construction of the proposed transmission line would maximize the use of existing public and private roads in the project area. Some temporary roads would be required for construction of the proposed line.

METHODS

Sampling for bats took place on 18, 20, and 21 July 2005 and was conducted by EKPC biologists Joe Settles, Josh Young, Seth Bishop, and Missy Toncray, and private contractors Jill Baldwin and Rhonda Smith. The two net sites that were surveyed were the same mist net sites that were selected in the mist-netting proposal submitted to USFWS. In accordance with the mist-netting guidelines listed in the Indiana Bat Revised Recovery Plan (USFWS 1999), sampling at each site consisted of a minimum of two net locations, which were tended from dusk until five hours after sunset.

Both net sites were located either on streams or along riparian zones. Net Site 1 was located on Jennings Creek east of the KY 2665 bridge (Figure 2). The creek at this point was approximately 30-40 ft wide and was bordered on both sides by riparian zones consisting primarily of sycamore (*Platanus occidentalis*) and box elder (*Acer negundo*). At points where these trees provided good canopy closure over the creek, two 30 ft mist nets were erected. This site was located on the Bowling Green North USGS 7.5 minute topographic quadrangle, with a GPS location of 36.99995 N – 86.48525 W.

Net Site 2 was located north of US 31W near the KY 3225 junction, on a private road running parallel to the south side of the Barren River (Figure 2). The road was wooded and ranged from 20-30 ft wide. A 20 ft and a 30 ft mist net were each placed along the road in areas where good canopy coverage was provided by such tree species as sycamore (*Platanus occidentalis*), box elder (*Acer negundo*), and hackberry (*Celtis occidentalis*). This site was also located on the Bowling Green North USGS 7.5 minute topographic quadrangle, with a GPS location of 37.01281 N – 86.41054 W.

Data recorded for bats caught included species, sex, age (adult or juvenile), reproductive condition, forearm length, and weight. Captured bats were banded with numbered aluminum bands (provided by the Kentucky Department of Fish and Wildlife Resources) and released at the capture site.

RESULTS

During the mist netting survey, 32 bats were captured consisting of four species: the red bat (*Lasiurus borealis*), big brown bat (*Eptesicus fuscus*), gray bat (*Myotis grisescens*), and eastern pipistrelle (*Pipistrellus subflavus*) (Table 1). Of the 32 total bats captured, there were 5 red bats, 18 big brown bats, 6 gray bats, and 3 eastern pipistrelles (Table 1). Both sites had equal species diversity with 3 species each (Table 1). The greatest number of bats was recorded at Site 2, with 24 total individuals captured on 20 and 21 July (Table 1).

Of the six gray bats that were captured at Net Site 1, four were adults, including a post-lactating female (Appendix 1). The other adult bats were all males, two of which were in breeding condition with testes descended. A juvenile female was also caught at Net Site 1.

DISCUSSION

The results of this mist netting survey show that no Indiana bats were captured, indicating absence of the species in the vicinity of the proposed powerline corridor. Therefore, the proposed powerline corridor should not adversely affect the Indiana bat or its summer habitat.

Although no Indiana bats were captured during the mist-netting survey, six federally endangered gray bats were captured at Net Site 1. Gray bats are locally abundant in this area of Kentucky and are known to roost in caves year-round (Barbour and Davis 1974). Since one of these bats was a post-lactating female and another was a juvenile female, a maternity cave may be present in the area. However, the project corridor was surveyed for the presence of caves or sinkholes that may serve as roosting habitat for this species. Although the project area is a well-documented karst region, no caves or sinkholes are located in the proposed powerline. A few sinkholes were encountered near the proposed powerline, but all were either filled in by soil and other debris or did not show any signs of bat activity. Some landowners were also questioned concerning the possibility of caves in the area, and none of the landowners knew of any caves within the project corridor. Therefore, gray bats should not be adversely affected by the proposed project.

DETERMINATION OF EFFECTS ON THE INDIANA BAT

_______ No effect

___X___ Not likely to adversely affect

_______ Likely to adversely affect

DETERMINATION OF EFFECTS ON THE GRAY BAT

_______ No effect

___X___ Not likely to adversely affect

_______ Likely to adversely affect

Literature Cited

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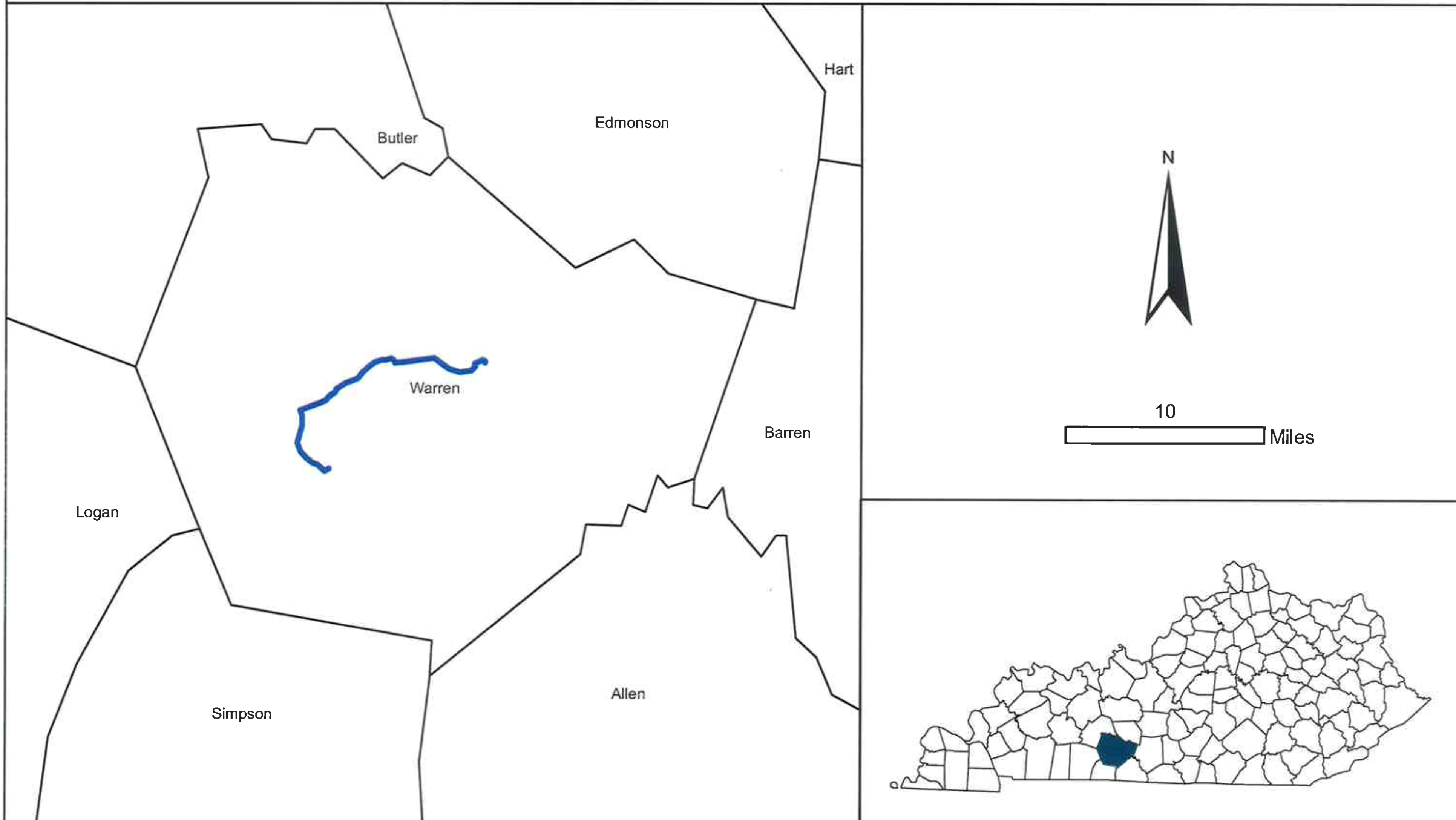
Table 1. Total bats captured at each net site by species during mist netting for EKPC's proposed General Motors-Memphis Junction transmission line project between 18 July and 21 July 2005

	Site 1	Site 2	Total Captures/Sp.
Lasiurus borealis	1	4	**5**
Eptesicus fuscus	0	18	**18**
Myotis grisescens	6	0	**6**
Pipistrellus subflavus	1	2	**3**
Total Captures/Net Site	**8**	**24**	**32**

FIGURES LEGEND

Figure 1. Location for the General Motors-Memphis Junction transmission line, Warren County, KY



Proposed Transmission Line Route

GM - Memphis Jct
Proposed 161kV Transmission Line
Warren County, KY
Project No. 21392

EAST KENTUCKY POWER COOPERATIVE
P.O. Box 707
Winchester, KY 40392-0707

Figure 2. Proposed route for the General Motors-Memphis Junction transmission line, Warren County, KY

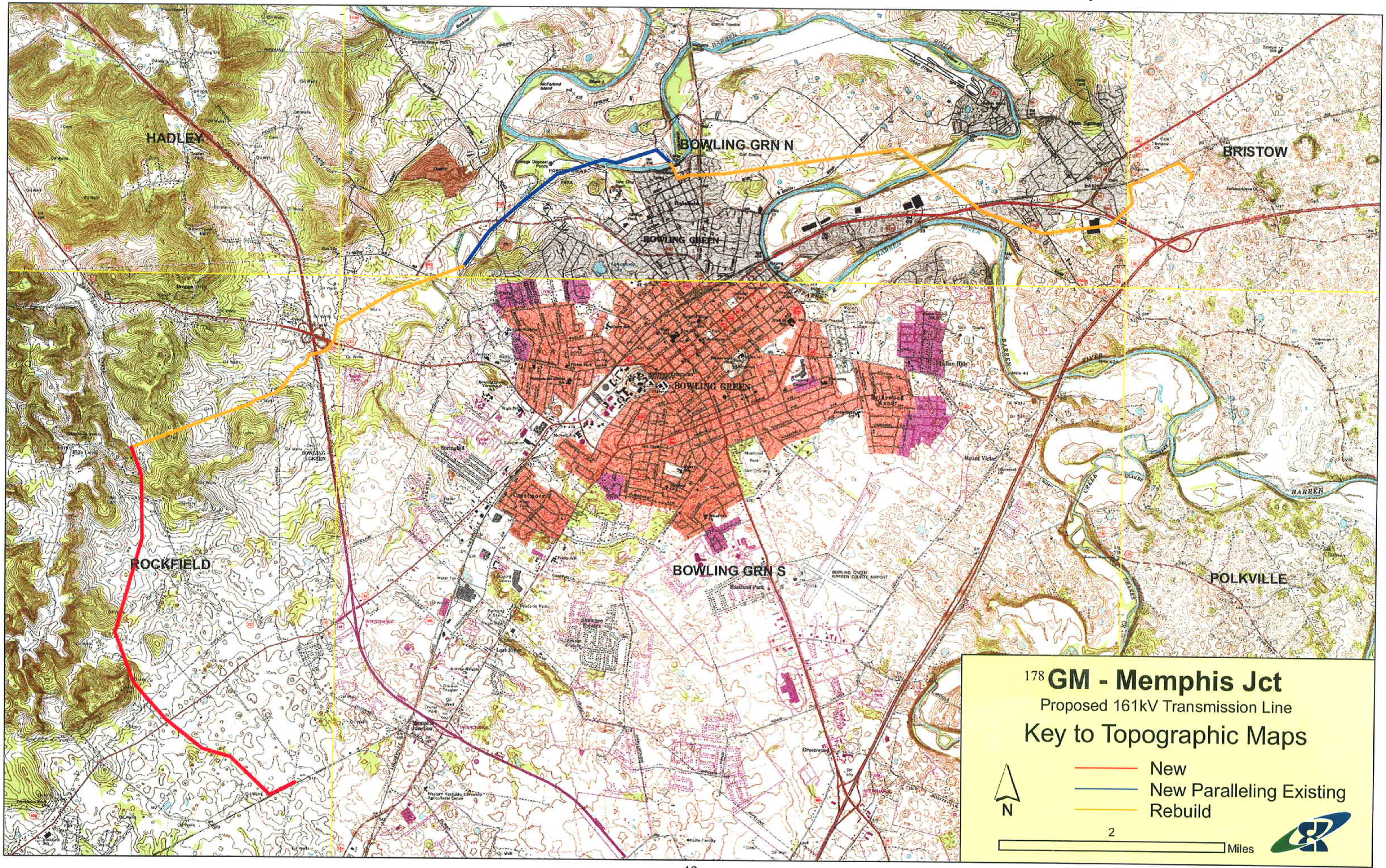
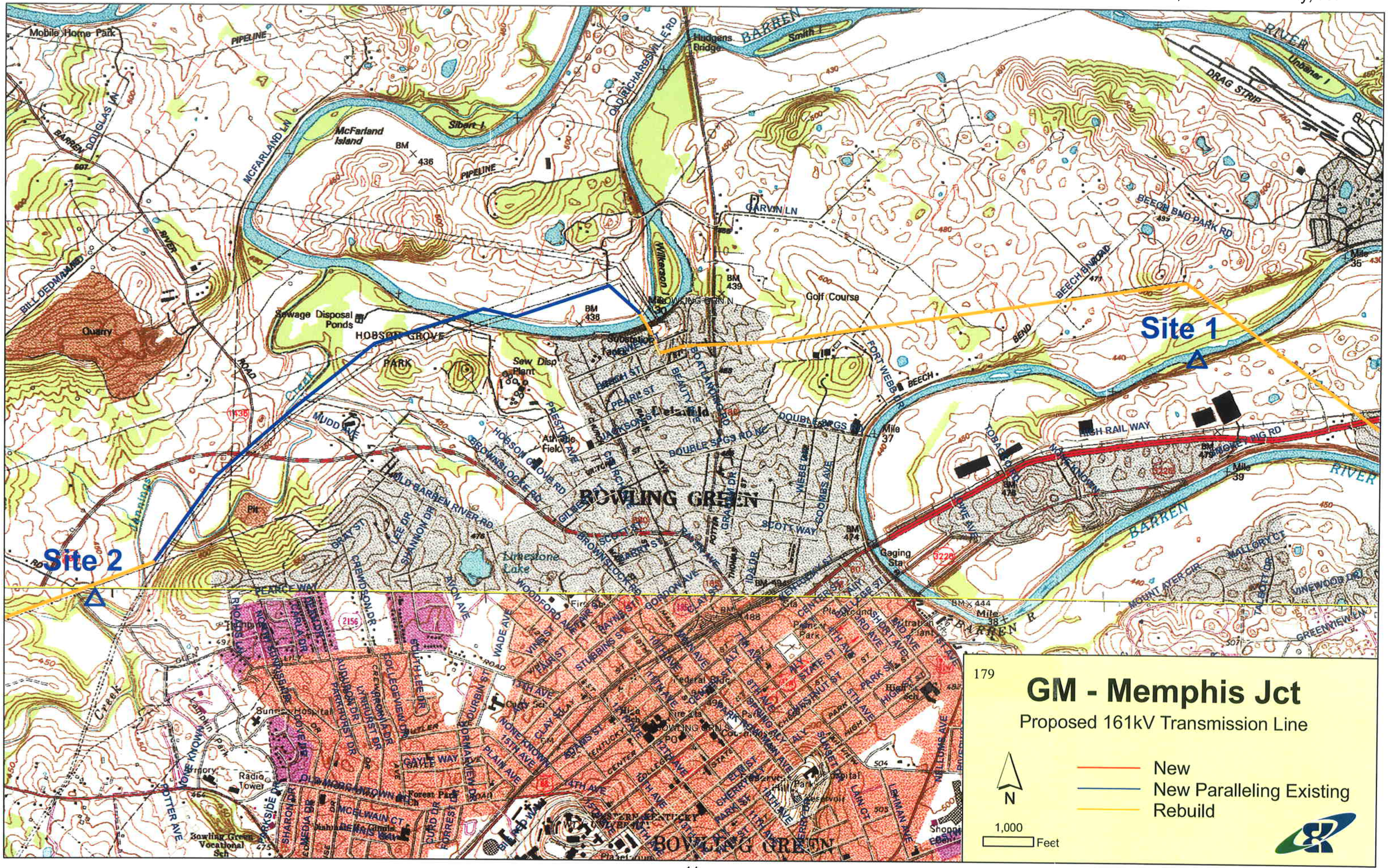


Figure 3. Mist net sites surveyed between 18 July and 21 July 2005 for the proposed General Motors-Memphis Junction transmission line, Warren County, KY



APPENDIX I. BATS CAPTURED DURING MIST NETTING SURVEY

Site	Date	Time	*Species*	Reproductive Cond	Age	Sex	Weight (g)	Forearm (mm)	Net	Band No KY F&W	Notes
GM-Memphis Jct. 1	7/18/05	00:35	*Myotis grisescens*	PL	A	F	11.1	43	A	A11828	
GM-Memphis Jct. 1	7/21/05	22:15	*Lasiurus borealis*	NR	J	F	9.8	42	A	A11602	
GM-Memphis Jct. 1	7/21/05	23:10	*Myotis grisescens*	TD	A	M	10.8	44	B	A11607	
GM-Memphis Jct. 1	7/21/05	00:00	*Myotis grisescens*	NR	A	M	10.8	43	A	A11634	
GM-Memphis Jct. 1	7/21/05	00:58	*Myotis grisescens*	NR	J	F	10.0	43	A	A11612	
GM-Memphis Jct. 1	7/21/05	01:55	*Myotis grisescens*	NR	A	M	10.4	43	B	A11626	
GM-Memphis Jct. 1	7/21/05	01:55	*Myotis grisescens*	TD	A	M	10.4	43	B	A11633	
GM-Memphis Jct. 1	7/21/05	02:05	*Pipistrellus subflavus*	NR	J	M	5.1	34	A	No Band	Too small for banding
GM-Memphis Jct. 2	7/20/05	21:17	*Lasiurus borealis*	-	-	-	-	-	A	No Band	Got out of net
GM-Memphis Jct. 2	7/20/05	21:35	*Lasiurus borealis*	PL	A	F	13.6	41	A	A11786	
GM-Memphis Jct. 2	7/20/05	21:35	*Eptesicus fuscus*	PL	A	F	18.5	47	A	A11776	
GM-Memphis Jct. 2	7/20/05	22:20	*Eptesicus fuscus*	NR	A	F	23.0	49	A	A11763	
GM-Memphis Jct. 2	7/20/05	22:20	*Eptesicus fuscus*	NR	A	M	17.0	47	A	A11754	
GM-Memphis Jct. 2	7/20/05	22:20	*Eptesicus fuscus*	PL	A	F	20.5	46	A	A11767	
GM-Memphis Jct. 2	7/20/05	22:20	*Eptesicus fuscus*	NR	A	F	19.5	48	A	A11756	
GM-Memphis Jct. 2	7/20/05	22:30	*Eptesicus fuscus*	NR	J	F	15.0	46	A	A11783	
GM-Memphis Jct. 2	7/20/05	22:35	*Eptesicus fuscus*	-	-	-	-	-	-	A11763	Recapture
GM-Memphis Jct. 2	7/20/05	22:50	*Lasiurus borealis*	NR	J	F	12.5	42	A	A11757	
GM-Memphis Jct. 2	7/20/05	22:56	*Eptesicus fuscus*	NR	A	M	17.7	46	A	A11774	
GM-Memphis Jct. 2	7/20/05	22:56	*Eptesicus fuscus*	NR	J	F	21	48	A	A11840	
GM-Memphis Jct. 2	7/20/05	22:56	*Eptesicus fuscus*	NR	J	F	13.3	44	A	A11830	
GM-Memphis Jct. 2	7/20/05	23:10	*Lasiurus borealis*	-	-	-	-	-	A	No Band	Got out of net
GM-Memphis Jct. 2	7/20/05	00:05	*Eptesicus fuscus*	NR	J	F	17.5	49	A	A11794	
GM-Memphis Jct. 2	7/21/05	21:25	*Pipistrellus subflavus*	NR	J	M	4.0	33	A	A11138	
GM-Memphis Jct. 2	7/21/05	22:20	*Eptesicus fuscus*	PL	A	F	22.7	47	B	A11149	
GM-Memphis Jct. 2	7/21/05	22:20	*Eptesicus fuscus*	-	-	-	-	-	B	No Band	Got out of net

Site	Date	Time	*Species*	Reproductive Cond	Age	Sex	Weight (g)	Forearm (mm)	Net	Band No KY F&W	Notes
GM-Memphis Jct. 2	7/21/05	23:10	*Eptesicus fuscus*	PL	A	F	18.6	44	B	A11126	
GM-Memphis Jct. 2	7/21/05	23:19	*Eptesicus fuscus*	NR	J	F	15.5	45	A	A11101	
GM-Memphis Jct. 2	7/21/05	23:35	*Eptesicus fuscus*	PL	A	F	17.5	45	B	A11129	
GM-Memphis Jct. 2	7/21/05	00:00	*Eptesicus fuscus*	NR	J	M	16.5	46	A	A11102	
GM-Memphis Jct. 2	7/21/05	00:30	*Eptesicus fuscus*	-	-	-	-	-	B	A11101	
GM-Memphis Jct. 2	7/21/05	00:30	*Pipistrellus subflavus*	NR	J	M	5.1	31	B	A11130	
GM-Memphis Jct. 2	7/21/05	01:15	*Eptesicus fuscus*	PL	A	F	20.9	47	B	A11115	
GM-Memphis Jct. 2	7/21/05	02:00	*Eptesicus fuscus*	PL	A	F	18.9	49	B	A11122	

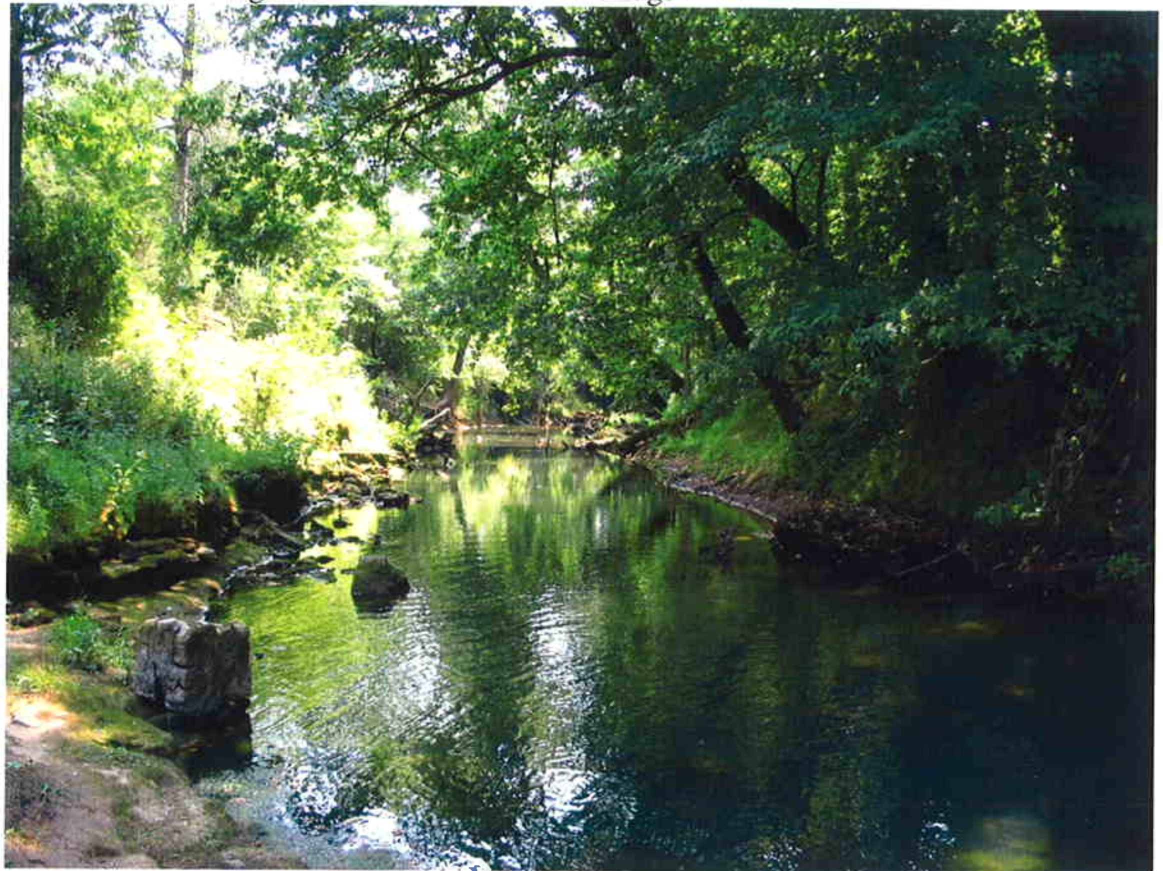
A = Adult
J = Juvenile
F = Female
M = Male

L = Lactating
PL = Post Lactating
P = Pregnant
S = Scrotal

NR = Non-reproductive
U = Unknown

APPENDIX II. PHOTOGRAPHS OF NET SITES

Net Site 1. Jennings Creek east of KY 2665 bridge



Nets A and B on same stream corridor

Net Site 2. Private road running parallel to the south side of the Barren River, north of US 31W near the KY 3225 junction

Net A

Net B

APPENDIX III. MIST NETTING DATA SHEETS

East Kentucky Power Mist Netting Data Sheet

1/A

Date: 7-18-05 Project: GM - Memphis Jct County: Warren Quad: BG North

Location: Glen Lily Rd (2665) + Jennings Creek Anabat #: ______

Start Time: 9:00 Start Temp: 85 End Time: 2:00 End Temp: 70°

Weather: Clear + humid Wind: — Personnel: RS, MCT

Provide sketch of net site on reverse side; include net location and number, water sources, roads, trails, bridges, mines/caves, local landscape features, and vegetative description.

#	Time (EST)	Species	Sex/ Repro	Age	Weight (g)	Forearm (mm)	Net/ Height (ft)	Band # Type:______	Transmitter Frequency
1	1235	M. grisescens	F/PL	A	11.1	43	A/12	A11822	
2									
3									
4									
5									
6									
7									
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35									

Site Description: GPS #1 GM-MJ NS Message: Jennings Creek
36.99995 N 86.48525 W

[illegible]

East Kentucky Power Mist Netting Data Sheet

01/B

Date: 7/21/05 Project: GM - Memphis Jct County: Warren Quad: Bowling Green South/N

Location: Jennings Creek approx. 0.5mi downstream of Glen Lily Rd.

Start Time: 9:00 Start Temp: 80.0°F End Time: 2:00 End Temp: 74.5

Weather: Hot, Humid, Clear Wind: calm Personnel: JRY, JES

Provide sketch of net site on reverse side; include net location and number, water sources, roads, trails, bridges, mines/caves, local landscape features, and vegetative description.

#	Time (EST)	Species	Sex/ Repro	Age	Weight (g)	Forearm (mm)	Net/ Height (ft)	Band # Type: KY:Lw	Transmitter Frequency
1	10:15	L. boreas	F	YOY	9.8	42	A/4'	A11602	
2	[illegible]	M. grisescens	M/TD	A	10.4	44	B/12'	A11627	
3	12:00	M. grisescens	M	A	10.8	43	A-14'	A11634	
4	12:58	M. grisescens	F	YOY	10.0	43	A-13'	A11612	
5	1:55	M. gris.	M	A	10.4	43	B/15	A11626	
6	1:55	M. gris	M/TD	A	10.4	43	B/15	A11633	
7	2:05	Pip sub	M	YOY	5.1	34	A/12	No Band	
8									
9									
10									
11									
12									
13									
14									
15									
16									
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35									

Site Description: Nets over stream corridor with good canopy closure. Stream corridor is buffered by approx. 20ft riparian zone — on either side is open pasture

East Kentucky Power Mist Netting Data Sheet

2A

Date: 7-20-05 Project: GM - Memphis Junction County: Warren Quad: Bowling Green N

Location: Barren River - Private property off 31W Anabat #:

Start Time: 9:00pm Start Temp: 85° End Time: 2:00am End Temp:

Weather: [illegible] and [illegible] Wind: 0-[illegible] Personnel: MCT, JNB

Provide sketch of net site on reverse side; include net location and number, water sources, roads, trails, bridges, mines/caves, local landscape features, and vegetative description.

#	Time (EST)	Species	Sex/ Repro	Age	Weight (g)	Forearm (mm)	Net/ Height (ft)	Band # Type:________	Transmitter Frequency
1	9:17	L. borealis	GOT.	out	OF	NET	A/12		
2	9:35	L. borealis	F/postlac	A	13.6	41	A/6	A11786	
3	9:[illegible]	E. fus	F/postlac	A	18.5	47	A/4	A11776	
4	[illegible]	E. fus	F/non-reproductive	A	23	49	A/7	A117[illegible]	
5	10:[illegible]	E. fus	M	A	17	47	A/10	A11754	
6	[illegible]	E. fus	F/postlac	A	20.[illegible]	46	A/5	A11767	
7	[illegible]	E. fus	F/nonrepro	A	[illegible]	48	A/10	A11756	
8	[illegible]	E. fus	F/nonrepro	YOY	15	46	A/12	A11783	
9	10:55	E. fus	recapture				A	A11743	
10	10:50	L. borealis	F/nonrepro	YOY	12.5	42	A/15	A11757	
11	[illegible]	E. fus	M	A	[illegible]	46	A/10	A1177[illegible]	
12	10:5[illegible]	E. fus	F	YOY	21	[illegible]	A/15	A[illegible]840	
13	10:5[illegible]	E. fus	F/nonrepro	YOY	13.[illegible]	--	A/15	A11830	
14	11:10	L. borealis	GOT	out	OF	NET	A/6		
15	[illegible]	E. fus	F	YOY	[illegible]	49	A/6	A11794	
16									
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18									
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34									
35									

Site Description: GPS #1: GM-MJ-N52 [illegible]: Barren River [illegible]
[illegible].01281 N 86.41054 W

[illegible] #1

East Kentucky Power Mist Netting Data Sheet

2B

Date: 7-2[illegible]-05 Project: GM - [illegible] County: Warren Quad: Bowling Green N

Location: Private drive [illegible] (same as 7-21) Anabat #: ______

Start Time: 9:00pm Start Temp: 91.5° End Time: 2:00am End Temp: [illegible]

Weather: Clear, hot & HUMID Wind: 0-5mph Personnel: SRB, JNB

Provide sketch of net site on reverse side; include net location and number, water sources, roads, trails, bridges, mines/caves, local landscape features, and vegetative description.

#	Time (EST)	Species	Sex/ Repro	Age	Weight (g)	Forearm (mm)	Net/ Height (ft)	Band # Type:____	Transmitter Frequency
1	[illegible]	P. sub.	M	YOY	4.0	33	A/6ft	A11138	
2	[illegible]	E. fus.	F/post lac	A	[illegible]	47	[illegible]	A11149	
3	[illegible]	[illegible]	[illegible]	[illegible]			B/[illegible]	————	
4	11:10	E. fus.	F/post lac	A	[illegible]	44	B/[illegible]	A11126	
5	11:19	E. fus.	F	YOY	15.5	45	A/3ft	A11101	
6	11:35	E. fus.	F/post lac	A	17.5	[illegible]	B/4ft	A11129	
7	[illegible]	E. fus.	M	YOY	16.5	46	A/5	A11102	
8	12:30	E. fus.	[illegible]				B/[illegible]	[illegible]	
9	12:30	E. fus.	M	YOY	5.1	31	B/3	A11130	
10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	47	B/>12	A111[illegible]	
11	[illegible]	[illegible]	F/[illegible]	A	[illegible]	[illegible]	[illegible]	[illegible]	
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Site Description:

Same as 7/21

APPENDIX IV. MISTNETTING GUIDELINES

MIST NETTING GUIDELINES FROM INDIANA BAT RECOVERY PLAN

Agency Draft - March 1999

RATIONALE
A typical mist net survey is an attempt to determine presence or probable absence of the species; it does not provide sufficient data to determine population size or structure. Following these guidelines will standardize procedures for mist netting. It will help maximize the potential for capture of Indiana bats at a minimum acceptable level of effort. Although the capture of bats confirms their presence, failure to catch bats does not absolutely confirm their absence. Netting effort as extensive as outlined below usually is sufficient to capture Indiana bats. However, there have been instances in which additional effort was necessary to detect the presence of the species.

NETTING SEASON
May 15—August 15

These dates define acceptable limits for documenting the presence of summer populations of Indiana bats, especially maternity colonies. Several captures, including adult females and young of the year, indicate that a nursery colony is active in the area. Outside these dates, even when Indiana bats are caught, data should be carefully interpreted: If only a single bat is captured, it may be a transient or migratory individual.

EQUIPMENT
Mist nets - Use the finest, lowest visibility mesh commercially available:

1. In the past, this is 1 ply, 40 denier monofilament—denoted 40/1
2. Currently, monofilament is not available and the finest on the market is 2 ply, 50 denier nylon—denoted 50/2
3. Mesh of approximately 1 1/4 - 13/4 in (~38 mm)

Hardware - No specific hardware is required. There are many suitable systems of ropes and/or poles to hold the nets. See NET PLACEMENT below for minimum net heights, habitats, and other netting requirements that affect the choice of hardware. The system of Gardner, et al. (1989) has met the test of time.

NET PLACEMENT Potential travel corridors such as streams or logging trails typically are the most effective places to net. Place the nets approximately perpendicular across the corridor. Nets should fill the corridor from side to side and from stream (or ground) level up to the overhanging canopy. A typical set is seven meters high consisting of three or more nets "stacked" on top one another and up to 20 m wide. (Different width nets may be purchased and used as the situation dictates.)

Agency Draft - March 1999

Occasionally it may be desirable to net where there is no good corridor. Take caution to get the nets up into the canopy. The typical equipment described in the section above may be inadequate for these situations, requiring innovation on the part of the observers.

RECOMMENDED NET SITE SPACING:
Stream corridors—one net site per km of stream.
Non-corridor land tracts—two net sites per square km of forested habitat.

MINIMUM LEVEL OF EFFORT
Netting at each site should consist of:

At least three net nights (unless bats are caught sooner) (one net set up for one night = one net night)
A minimum of two net locations at each site (at least 30 m apart, especially in linear habitat such as a stream corridor)
A minimum of two nights of netting
Sample Period: begin at sunset; net for at least 5 hr
Each net should be checked approximately every 20 min
No disturbance near the nets, other than to check nets and remove bats

WEATHER CONDITIONS
Severe weather adversely affects capture of bats. If Indiana bats are caught during weather extremes, it is probably because they are at the site and active despite inclement weather. On the other hand, if bats are not caught, it may be that there are bats at the site but they may be inactive due to the weather. Negative results combined with any of the following weather conditions throughout all or most of a sampling period are likely to require additional netting:

Precipitation
Temperatures below 10°C
Strong winds (Use good judgment: moving nets are more likely to be detected by bats.)

MOONLIGHT
There is some evidence that small myotine bats avoid brightly lit areas, perhaps as predator avoidance. It is typically best to set nets under the canopy where they are out of the moon light, particularly when the moon is half-full or greater.

APPENDIX V. MIST-NETTING PROPOSAL

July 11, 2005

Mr. Lee Andrews
U.S. Fish and Wildlife Service
Frankfort Field Office
3761 Georgetown Rd.
Frankfort, KY 40601

Dear Lee,

Enclosed is information concerning the Indiana Bat (*Myotis sodalis*) mist-netting survey plan for the following project being considered by East Kentucky Power Cooperative (EKPC):

General Motors – Memphis Junction 161 kV Transmission Line

The project is approximately 10 miles in length and is located in Warren County in western Kentucky (See overview map). The line begins at the East Bowling Green/ General Motors Substation northeast of Bowling Green and travels west along the northern edge of the city. It then turns southwest after the third Barren River crossing and extends to just east of Blue Level. At this point, the line travels south and ends at the Memphis Junction Substation, located southwest of Memphis Junction. The majority of the project involves rebuilding an existing line to increase it from 69 kV to 161 kV. A portion of the line, running from the second Barren River crossing to the Jennings Creek crossing, will be new line that parallels an existing line. Another section, extending from Blue Level south to the Memphis Junction Substation, will be new transmission line.

The parallel and rebuild sections of the line will require extensions of the current rights-of-ways (ROWs), with a maximum of 70 additional feet for the parallel section and 30 additional feet (15 on each side) for the rebuild section. The extension of the existing ROWs will require the clearing of some trees and could potentially affect the Indiana bat. Therefore, a mist-netting survey plan is being created to address this issue.

EKPC biologists surveyed the 10 miles of existing powerline ROW and concluded that approximately 2 miles are bordered by wooded areas. EKPC biologists classified the wooded areas into one of three categories: good, marginal, and poor. These categories are described as:

> **Good** – the wooded areas provide adequate foraging habitat, potential roost trees, and are connected to other sections of habitat of the same quality.
>
> **Marginal** – the wooded areas provide some opportunities for foraging, but the majority of the area has a thick understory. The trees in this designation are fairly young in age with little development of cavities, crevices, and exfoliating bark providing limited roosting opportunities for Indiana bats.

Poor – the wooded areas provide very little opportunity for foraging. The wooded areas have a dense understory, trees are very young, and the area resembles the late stages of old field succession. Potential roost sites are very limited and it is estimated that no potential roost trees occur in this habitat type.

The section of the line with the most wooded area begins west of the Natcher Parkway and extends southwest to KY 432. This section of the line is being rebuilt, but the current ROW is wide enough to accommodate the upgrade. Therefore, this section will not require any additional clearing of trees.

The remaining portion of the line contains less than 1 mile of wooded habitat. Two small, wooded areas contain woods that may provide habitat suitable for the Indiana bat. These areas are marked on the enclosed maps and described below.

1) **Barren River crossing (Map 1).** This site has good woods along both sides of the river, with wooded roads running parallel to the river on the north side. We propose one mist-netting site here over the river and along the roads.

2) **Jennings Creek crossing (Map 2).** This area contains good woods along the banks of the creek, with a larger area of woods located adjacent to the south side of the creek. One mist-netting site is proposed for this area over the creek.

Please review this proposal for a mist netting survey for the Indiana Bat. After surveying the project area, we feel this proposal is more than adequate to determine the presence/probable absence of this species in the project area. Once the survey has been completed, a detailed report of our results will be submitted to your office for comment. We are also in the process of surveying the project area for other federally threatened and endangered species that may occur there. We are surveying the area for species such as Price's potato-bean, Eggert's sunflower, and gray bats. We will submit the results of these surveys as well with the mist netting report.

I would appreciate your comments on this proposal for mist-netting as soon as possible. If you have any questions concerning this or any of our projects please feel free to contact me at your convenience. Thank you for taking the time to address our concerns.

Sincerely,

Joe Settles
Supervisor
Natural Resources and Environmental Communications

APPENDIX F
CULTURAL HISTORIC RECONNAISSANCE SURVEY REPORT

Contract Publication Series 06-036

CULTURAL HISTORIC RECONNAISSANCE SURVEY FOR THE PROPOSED GM TO MEMPHIS JUNCTION TRANSMISSION LINE PROJECT IN WARREN COUNTY, KENTUCKY

By

Trent Spurlock

Prepared for

Mr. Joe Settles
East Kentucky Power Cooperative
4775 Lexington Road
P.O. Box 707
Winchester, KY 40392-0707
(859) 745-9256

Prepared by

Cultural Resource Analysts, Inc.
151 Walton Avenue
Lexington, Kentucky 40508
Phone: (859) 252-4737
Fax: (859) 254-3747
CRAI Project No.: K06E001

Craig Potts
Principal Investigator

March 16, 2006

Lead Agency: Rural Utilities Services

INTRODUCTION

During January and February 2006, Cultural Resource Analysts, Inc. (CRAI), completed a cultural historic reconnaissance survey of the project area and reevaluation of previously identified sites for the proposed East Kentucky Power Cooperative (EKPC) GM to Memphis Junction transmission line project southwest of Bowling Green, Warren County, Kentucky (Figure 1).

The proposed GM to Memphis Junction electric transmission Line would be designed for 161 kilovolt (kV) operation and would be 15.21 miles in length. The new transmission line would be supported by 195 single, and H-frame double and triple Corten tubular steel pole structures that would range in height from 95 to 100 feet above ground. The average span between support structures would be 600 feet. The majority of the proposed new transmission line would be constructed to double circuit specifications but would be operated as a single circuit line until the electric load in the area warrants operation of the second circuit. However, roughly one quarter of the proposed line would be constructed as single circuit. Construction of the new line would involve rebuilding of a 5.17 mile section of existing double circuit 69 kV transmission line and a 3.39 mile section of existing single circuit 69 kV transmission line, both supported by single wood pole structures on existing 100 foot wide right-of-ways. The existing lines within these two sections would be dismantled and replaced by the proposed new transmission line. The proposed new line would be located on the existing 100 foot wide right-of-ways within these two sections and would not require any additional new right-of-way width. The balance of this portion of the line would be new construction. A 2.41 mile section would require a new 100 foot wide right-of-way and would parallel an existing electric transmission line. In addition, a 4.24 mile section requiring a new 100 foot wide right-of-way is also proposed, 50 feet of which would be shared with another proposed new electric transmission line. The right-of-way for the proposed transmission line would encompass approximately 184.4 acres of land, of which 118.4 acres would utilize existing right-of-ways.

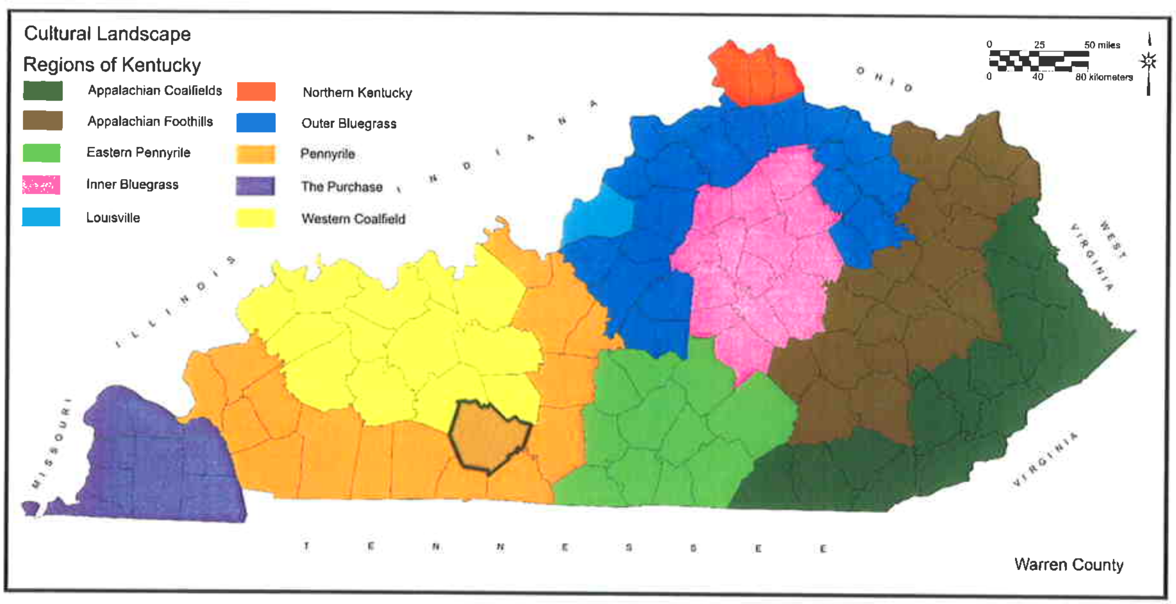

Figure 1. Map of Kentucky showing the location of Warren County.

After consultation with the KHC, the area of potential effect (APE) on cultural resources for this project was identified as a one mile corridor centered on the proposed centerline of the 4.2 miles of new transmission line to be constructed between the West Bowling Green Junction and the Memphis Junction Substation to the southwest of Bowling Green (See Figure 2). The balance of the proposed project requires rebuilding or paralleling of existing transmission lines, therefore the KHC determined this portion of the project would not have an effect on cultural resources. It was determined that a cultural historic reconnaissance survey of the project area and a reevaluation of previously identified sites in the APE would be sufficient for the proposed project.

During consultation with EKPC, the KHC determined five previously surveyed sites (Sites 1-5) were located near the proposed transmission line project. These five previously surveyed sites are the focus of this report. They are: WA-318, WA-325, WA-135, WA-132, and WA-131 (Sites 1-5). One of these sites, WA-132, had been determined eligible for the NRHP previously, however, the date of determination and the NRHP boundaries of the site were not available. A reconnaissance level survey was conducted of the proposed project's APE in order to resurvey and re-evaluate those sites previously identified. None of the other previously surveyed sites appear eligible for listing in the NRHP.

The purpose of the survey was to:

1) Field check and resurvey all previously identified cultural historic sites (above ground resources 50 years of age or older) located within the APE;
2) evaluate their eligibility for listing in the NRHP and recommend boundaries, if eligible;
3) evaluate the APE for the presence of other properties over 50 years of age.

The survey was conducted to comply with federal regulations concerning the impact of federal actions on sites and structures listed in or eligible for nomination to the NRHP. These regulations include Section 106 of the National Historic Preservation Act of 1966 and the regulations published in the Code of Federal Regulations at 36 CFR Part 800. Federal actions include the use of federal funds or the granting of a federal permit.

The following letter report is a summary of the survey findings. Trent Spurlock of CRAI completed the work described herein during the weeks of January 23, 30, and February 6 and 13, 2006. Fieldwork required approximately 33.5 person hours to complete and was conducted by Trent Spurlock and Jackie Horlbeck. Conditions were cold and sunny to partly cloudy, and no restrictions or limitations were placed on the survey effort. The analysis was conducted at the request of Mr. Joe Settles of EKPC.

DESCRIPTION OF AREA OF POTENTIAL EFFECT

The 4.2 miles of new construction for the proposed transmission line from the GM to the Memphis Junction Substation begins west of the community of Blue Level. The following figures and descriptions describe the natural and historic environment associated with the project area. An existing transmission line extends in a northeast/southwest direction in the northern portion of the APE, just southeast of the community of Blue Level. Figure 3 is a view of this transmission line looking northeast from Blue Level Road and shows the area of the West Bowling Green Junction. The proposed transmission line will intersect the existing line in Figure 3 and continue to the southeast over the hillside. Another existing transmission line extends to the north from its intersection with the previous transmission line near Blue Level Road (Figure 4). Blue Level Road continues to the southeast along a hillside with an open valley to the southwest of the roadway (Figure 5).

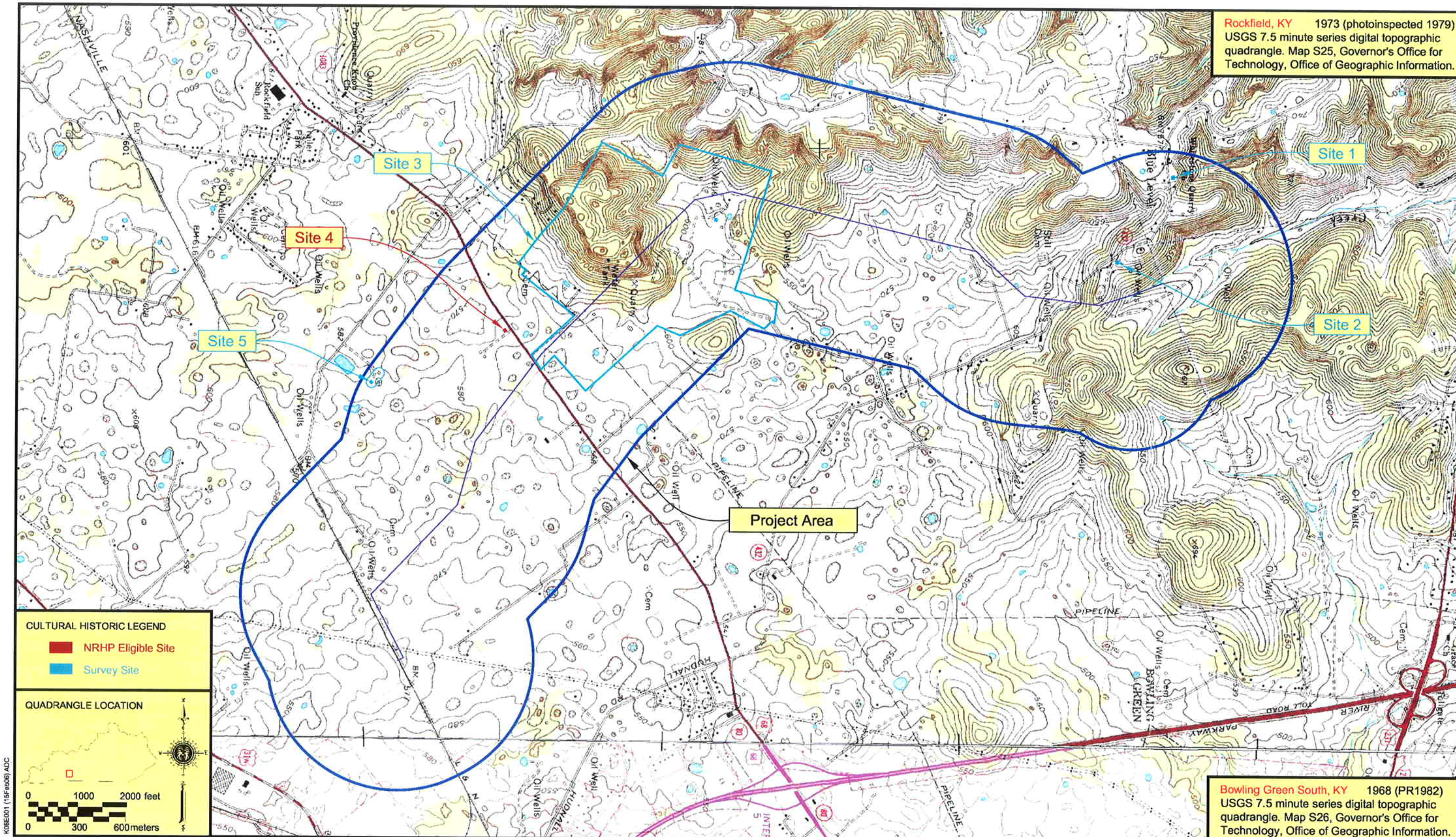

Figure 2. Topographic map showing project area and cultural historic sites.

Figure 3. Overview of existing transmission line looking northeast.

Figure 4. Overview of second existing transmission line looking north.

Figure 5. Overview from Blue Level Road looking southwest.

The proposed line extends in a southwest direction, crossing Blue Level Road. Figure 6 is a view from Blue Level Road at the approximate location where the proposed transmission line extends into the valley. The line then extends to the southwest between Blue Level-Providence Road and Blue Level Road. Figure 7 is a view to the north from the rear of a residence located west of Blue Level Road. Figure 8 is a view to the south/southwest from approximately the same position. The proposed transmission line continues in a southwest direction from the rear of the residence associated with Figures 7 and 8. Figure 9 is a view to the northwest to the secondary residence located on Site 3 following the proposed transmission line route through a pasture. Figure 10 is a view to the south from the driveway of the main residence of Site 3.

The proposed transmission line continues over the hill heading southeast passing between a historic quarry and a modern water tank. Figure 11 is a view to the northwest and Figure 12 is a view to the southeast from the approximate location the line crosses US 68. The proposed line continues to the southeast. Figure 13 illustrates the area southeast of Site 4. Figure 14 is a view to the southwest from John D. Jones Road approximately halfway between US 68 and the railroad tracks. Figure 14 illustrates the open pastures found along the route of the proposed transmission line in the area between US 68 and the railroad tracks. Upon reaching the railroad tracks the proposed line extends a short distance to the northeast before terminating at the Memphis Junction Substation. Figure 15 is a view to the southwest of the Memphis Junction Substation. The majority of the APE southeast of the railroad tracks has recently been developed as an industrial park. Figures 16, 17, and 18 are views in the industrial park. The APE was defined as a one mile corridor centered on the proposed route of the transmission line project. The survey corridor was approximately 4.2 miles in length. This corridor, as well as sites surveyed, is depicted on Figure 2, topographic quadrangle map.

Figure 6. Overview from Blue Level Road looking southwest along project corridor.

Figure 7. Overview looking northeast from rear of residence on Blue Level Road.

Figure 8. Overview looking southwest from rear of residence on Blue Level Road.

Figure 9. Overview looking northwest from Site 3.

Figure 10. Overview looking southwest from driveway of Site 3.

Figure 11. Overview looking northwest from US 68.

Figure 12. Overview looking southeast from US 68.

Figure 13. Overview looking southeast from Site 4.

Figure 14. Overview looking southwest from John D. Jones Road.

Figure 15. Overview looking southwest at Memphis Junction Substation.

Figure 16. Overview looking southwest near Memphis Junction Substation.

Figure 17. Overview looking southeast near Memphis Junction Substation.

Figure 18. Overview looking northeast along Century Street.

RESEARCH AND SURVEY METHODOLOGY

The survey was conducted in accordance with the "Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation" (National Park Service 1983). In addition, guidelines offered in the following documents were followed: Guidelines for Local Surveys: A Basis for Preservation Planning: National Register Bulletin #24 (National Park Service 1985) and the Kentucky Historic Resources Survey Manual (Kentucky Heritage Council).

Before entering the field, all available surveys, reports, studies, maps, and other data pertinent to the project area were identified and reviewed. This task began with an investigation of the records of the KHC. The KHC files revealed that five properties located in the APE (Sites 1-5) had been previously documented. Site 4 was the only site previously determined eligible for listing in the NRHP. It could not be determined when this site was determined eligible for the NRHP or the agreed upon boundaries.

A total of 329 sites in Warren County, approximately 1,000 in Bowling Green, and 74 in Oakland have been previously surveyed according to the records of the KHC. These sites include commercial structures in the Bowling Green downtown area, houses in nineteenth century residential areas, a number of bungalows located in areas of early twentieth century development, and historic commercial roadside resources along US 31W (Kentucky Heritage Council, Survey and National Register Files).

In 1978 the Warren County Multiple Resources National Register Nomination was completed by Kenneth T. Gibbs, Jayne C. Henderson, and Lee D. Walker for the Kentucky Heritage Commission. During the survey conducted for the nomination, 192 sites were surveyed outside the Bowling Green city limits. There were 627 historic resources that were mapped by a topology system during the survey. The nomination included four districts in Bowling Green and a historic district in Smiths Grove. Thirty-seven sites located outside Bowling Green were individually nominated. The nomination includes a historical context of Warren County (Gibbs et al 1978).

Architecture of Warren County, Kentucky 1790-1940 is a compilation of surveys conducted in Warren County. The book was compiled by the Landmark Association of Bowling Green and Warren County, Inc. and published in 1984. A historic and architectural overview is included in the publication. This source was used for the development of the Environmental Overview section of this letter report. A more recent historic resource survey report entitled "Update and Expansion of Warren County Historic Resources Survey" was also obtained. This revised report was completed in September 1997 by Janet Johnston and Becky Proctor, and it includes an updated list of sites surveyed and evaluated in Warren County, as well as a detailed appendix with additional information on these sites. No historic context was developed for this document (Landmark Association of Bowling Green and Warren County, Inc. [LABGWC] 1984; Johnston & Proctor 1997).

Helen C. Powell of H. Powell and Co., Inc., completed the Cultural Resources Survey for the Natcher Parkway Extension in Warren County, Kentucky in 1998. The report was written for American Engineers. The survey was completed to identify all historic properties in the APE of the proposed project and assess their eligibility for listing in the NRHP and determine the effect of the proposed project on those sites eligible for listing. The project corridor does not overlap with the APE for the current proposed project. The context Powell developed for the previous report was utilized in the Environmental Setting of this letter report (Powell 1998).

A Cultural Historic Survey for the Proposed US 31W Hazard Elimination Project, University Boulevard to Emmett Avenue, Bowling Green, Warren County, Kentucky was prepared by Rebecca Lawin McCarley of Cultural Resource Analysts, Inc., in February 2003. The purpose of the survey was to identify all historic properties in the APE of the proposed US 31W project and to assess their eligibility for listing in the NRHP. The project corridor of this previous report does not overlap the APE of the current proposed project. The context developed for the previous report was used in the Environmental Setting of this letter report (McCarley 2003).

The Cultural Historic Survey for the Proposed Widening of US 31W (Nashville Road) From Natcher Parkway South to Dillard Road in Bowling Green, Warren County, Kentucky (3-317.00) was identified during the records review. This report was completed by Rebecca Rapier and Bethany W. Rogers of Cultural Resource Analysts, Inc. in 2003. The report was written for the Division of Environmental Analysis of the Kentucky Transportation Cabinet. The purpose of the report was to identify all historic properties in the APE of the proposed project, to assess their eligibility for listing in the NRHP, and determine any effects the proposed project may have on any historic resource listed in or eligible for listing in the NRHP. Eleven previously unidentified sites were surveyed for the previous project. One site, a dairy barn, appeared eligible for listing in the NRHP. The APE of this prior project slightly overlaps the extreme southern portion of the current proposed project. No historic sites were surveyed in the overlapping portion of the APE of either report (Rapier and Rogers 2003).

A technical report on the history and historic resources of Bowling Green from the *Warren County Comprehensive Plan* was identified during the records review. The History of Bowling Green and Warren County was completed by Nancy Baird and Carol Crowe-Carraco in 1989. This report was utilized in the Environmental Setting for this letter report (Baird & Crowe-Carraco 1989).

Emily Perkins Sharp prepared the report Keystone Farm and Keystone Quarry: Early Warren County Landmarks in 2006. The report includes overviews of the property (Site 3), images of the interior of the main residence, pages of the Perkins family Bible, a brief history of the Perkins family, and maps of the approximate current boundary of the property and the route of the proposed transmission line. This report was used in the history of the site (Sharp 2006).

The archival research continued at the University of Kentucky, the Lexington Public Library, and the Kentucky Library at Western Kentucky University. Sources found in this research include an 1877 map of Warren County, a 1920 oil map showing property owners in a portion of the project area, 1928 oil and gas map of Warren County, and a 1952 topographic map of the project area. Additional documents identified during the archival research are listed in the bibliography.

Following the preliminary archival research, CRAI staff conducted a reconnaissance survey of the APE, during which all previously identified properties 50 years of age or older were resurveyed and reevaluated for eligibility for listing in the NRHP. The APE was defined as a one-mile corridor centered on the proposed transmission line. The APE was defined on the topographic map. The surveyors then visited the project area and resurveyed all resources within the project boundary that had previously been identified. The area surveyed is depicted on Figure 2.

During the field survey, 5 previously identified individual historic properties were documented (Sites 1-5). These properties were evaluated to determine their eligibility for listing in the NRHP. The descriptions and evaluations are found in the Inventory of Previously Surveyed Sites section of this letter report.

In general, in order for a property to be eligible for listing in the NRHP, it must be at least 50 years old and possess both historic significance and integrity. Significance may be found in four aspects of American history recognized by the National Register Criteria:

A. association with historic events or activities;
B. association with important persons;
C. distinctive design or physical characteristics; or
D. potential to provide important information about prehistory or history.

A property must meet at least one of the criteria for listing. Integrity must also be evident through historic qualities including location, design, setting, materials, workmanship, feeling, and association.

ENVIRONMENTAL SETTING

Historically, the project area has been dominated by the rugged topography of the hills in the northern portion of the APE, north of current US 68, and the gently rolling topography of the southern portion of the APE. The rolling topography of the southern portion of the APE and valleys between the hills was identified for its agricultural potential by early settlers to the area. Some rolling terrain suitable for livestock is found along the top of the ridgeline in the northwest portion of the APE, to the northwest of Providence-Blue Level Road.

Log houses were constructed by early settlers of Warren County in the late eighteenth and early nineteenth century. The majority of remaining log residences surveyed in the 1980s were located in the northwest and southeastern portions of the county (LABGWC 1984:19). Log agricultural and domestic outbuildings continued to be constructed through the first half of the nineteenth century. The Greek Revival style, which gained popularity in the region in the 1840s, includes characteristics such as: elaborate door surrounds with sidelights and transoms, porticos with pediments supported by classical columns, façade and corner pilasters, and frieze-bands along the cornice. The majority of rural houses exhibiting this style are I-houses, two-story residences with a central hall flanked on either side by a single room. Although most Greek Revival style residences in Warren County are I-houses, a few side-passage forms were surveyed in the 1980s (LABGWC 1984:20-21).

Warren County's economy was tied to local surpluses of agricultural products and livestock throughout the nineteenth century, and relied heavily on railroad networks to access distant markets. The Louisville and Nashville Railroad line from Bowling Green to Nashville was completed in 1859, and a line between Bowling Green and Louisville, as well as the Memphis Branch was completed by 1861. The Memphis Branch railroad line joined the Memphis and Ohio Railroad and the Memphis, Clarksville, and Louisville Railroad lines to connect Bowling Green to Memphis, Tennessee (LABGWC 1984:12; Tennessee Historical Society 2002). With its strategic location along the Louisville and Nashville Railroad lines and its proximity to the Tennessee border, Bowling Green suffered economically during the Civil War. The local economy rebounded in the post-Civil War era, with river transportation and the railroad playing a major role in the growth of Bowling Green (LABGWC 1984:13-15). Quarrying of local stone was a local industry in the Bowling Green area since the 1830s. The introduction of the railroad as a transportation outlet contributed to the rise of the stone quarrying industry in Warren County and in the proposed project's APE. Dependant on the health of the national economy, local stone quarries continued providing building materials throughout the southeast until the Great Depression.

The 1877 atlas of Warren County shows Memphis Junction and the associated railroad lines (Figure 19). White Stone Quarry is depicted in the north portion of the map along with its railroad spur. Residences are indicated along the railroad spur, possibly housing for quarry laborers. A portion of what appears to be present-day Blue Level Road is shown on the map. This road appears to end at the White Stone Quarry. A Baptist church is indicated on the map between the road and the White Stone Quarry railroad spur. The H. Potter Quarry appears to be located near the present-day community of Blue Level. Residences are shown along present-day US 68 and west of Blue Level Road. H. Potter is a large landowner on the southeast side of the Russellville Pike (US 68) as the owner of Walnut Valley Farm and a distillery (Beers and Lanagan 1877).

Agriculture and livestock continued to play an important role in Warren County's economy through the last of the nineteenth and first half of the twentieth centuries. General farming practices were utilized in Warren County during this period, with most farmers growing diversified crops. The amount of livestock produced increased dramatically in the 1890s. One source states that tenant farming was not widely practiced in Warren County. By the 1930s Warren County was one of the leading producers of livestock and dairy products in the state (LABGWC 1984:14-16).

Late nineteenth and early twentieth century vernacular housing found in the proposed project's APE includes examples of one-story, four-bay, side-gable residences. These examples have two single-leaf entries along the façade, although one example has enclosed one entry (Figures 20 and 21). Stone is a readily available building material in the project area and local vicinity. Stone was used in nineteenth century residences for foundations and chimneys. Residences constructed of rubble stone or clad in a rubble stone veneer can be found in Bowling Green and the surrounding area. Vernacular front- or side-gable residences or one- or one-and-one-half-stories that appear to be constructed in the twentieth century are located in the APE with stone exteriors (Figures 22 and 23). Many of the residences have grapevine mortar joints along the stone exteriors. The same type of stone was utilized in foundations during the first three-quarters of the twentieth century in Warren County, as stone foundations can be found on examples of Ranch houses of the post World War II era.

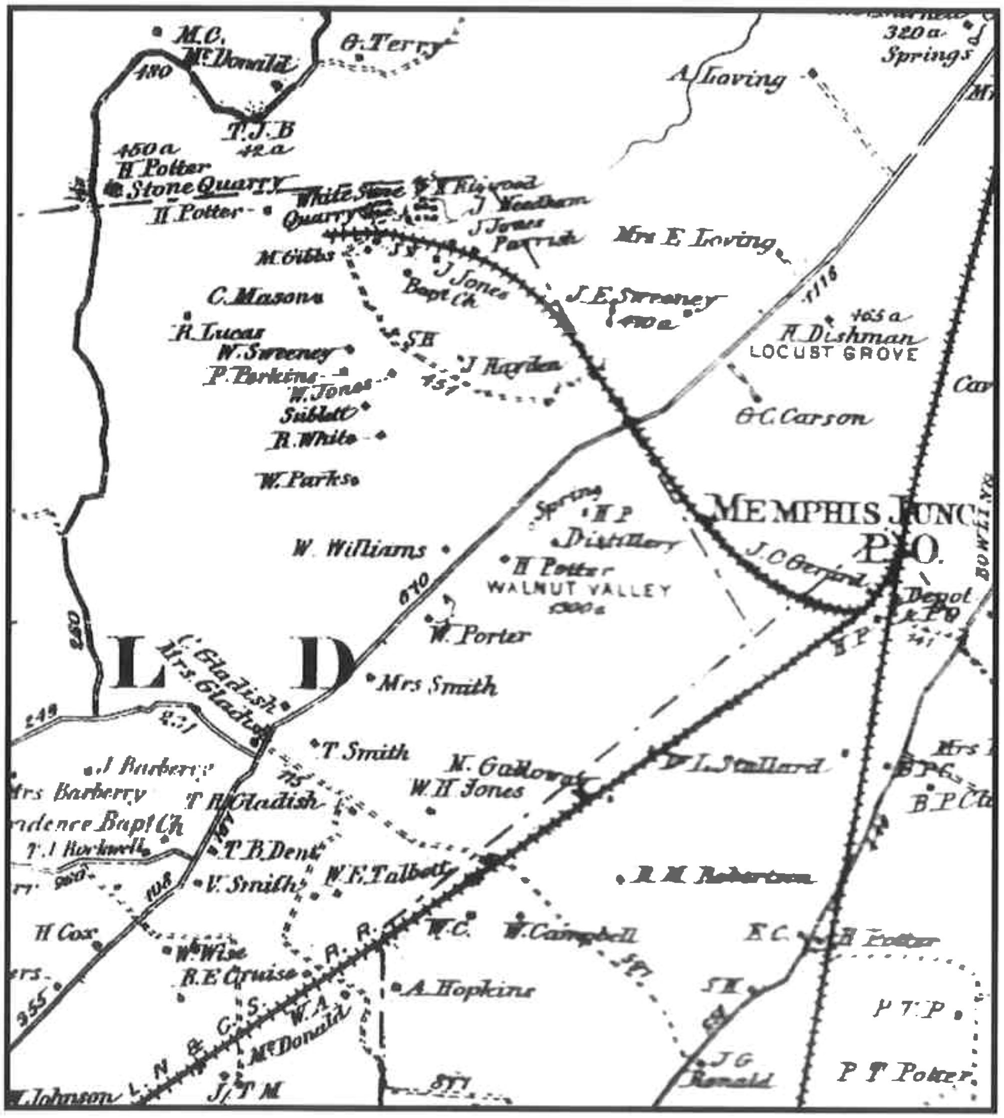

Figure 19. 1877 Map of Warren County, Kentucky (Beers and Lanagan).

Figure 20. Example of one-story, four-bay, side-gable house in APE.

Figure 21. Example of one-story, four-bay, side-gable house with enclosed bay in APE.

Figure 22. Example of front-gable house with stone exterior.

Figure 23. Example of one-story, four-bay, side-gable house with stone exterior in APE.

Oil was added to the economic mix of Warren County in the early twentieth century. With the increasing number of automobiles and consequent demand for oil, speculators and oil companies began drilling for oil in Warren County. Oil production in Warren County began in full force in the late 1910s, peaking at 1,113,165 barrels in 1922. Though lower, production remained high at 320,587 barrels in 1927 and 253,450 in 1928. Throughout the 1930s, over 100,000 barrels per year were consistently produced (Baird and Crowe-Carraco 1989:5-6; McCarley 2003:14; Warren County Historical Society and Southern Kentucky Genealogical Society [WCGS and SKGS] 1991:9). The 1928 (reprinted 1949) Oil and Gas Map of Warren County illustrates the numerous oil wells that were drilled in the area by the late 1920s (Figure 24). The dark circles are oil wells and the dark circles with a line across them are sites that show oil in the well. Producing oil wells continue to be seen in the current landscape of the project area. The 1928 map also depicts Memphis Junction and the associated railroad lines, present-day US 68, and Blue Level Road leading to the community of Blue Level. Two schools and three churches are shown on the map in or near the community of Blue Level. White Stone Quarry is illustrated on the map with its associated railroad spur. The map also shows two quarries to the south of the main residence of Site 3 (Kentucky Geological Survey 1928 [reprinted 1949]).

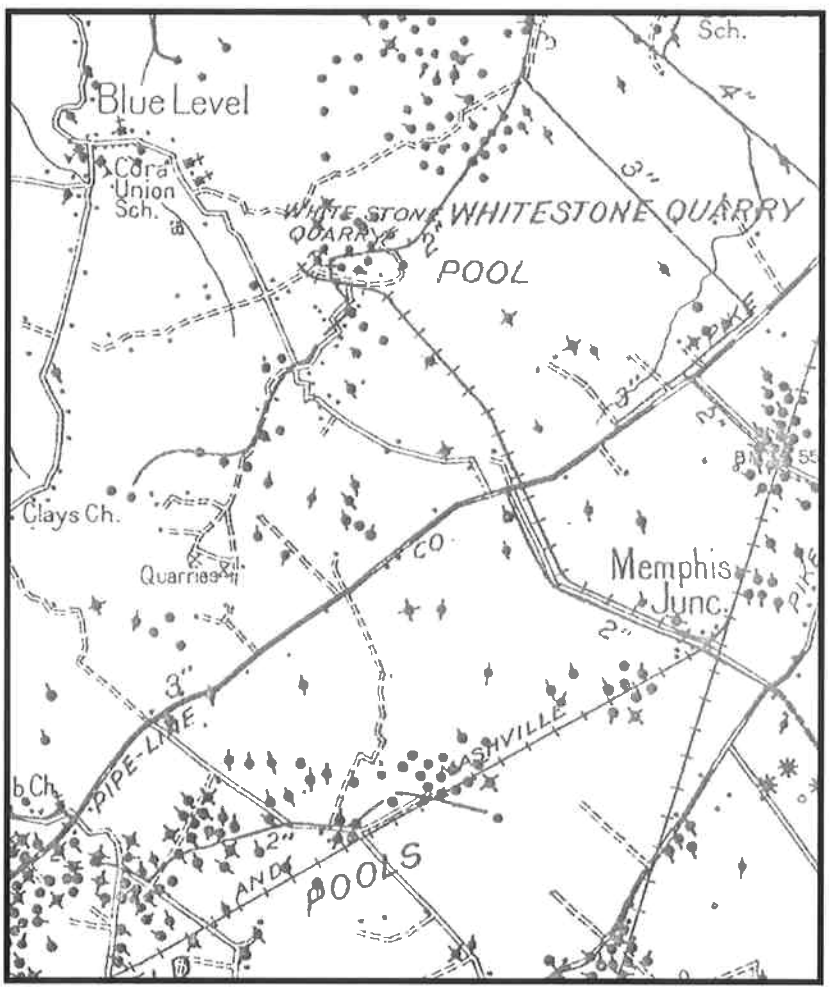

Figure 24. 1924 Oil and Gas Map of Warren County (reprinted 1949) (Kentucky Geological Survey).

During the early twentieth century, the "Good Roads" movement was growing nationally with the rise of the automobile. Warren County and other state interest groups called for the completion of the Dixie Highway from Sault St Marie, Michigan through western Kentucky and on to Fort Meyers, Florida. In 1920, Nashville Road was designated as the Dixie Highway. In 1927, as a result of the Federal Aid Road Act, Kentucky declared seven percent of their roads as United States numbered highways, and Dixie Highway became US 31W. The route through Kentucky began in Louisville and headed south through Elizabethtown, Bowling Green, and Franklin to the state line. In Warren County, US 31W took a southwest course from Edmonson to Simpson counties. As US 31W became a route for local commuters and long-distance travelers in the mid-twentieth century, residential development expanded and commercial establishments flourished along the highway, including hotels and tourist courts, restaurants, and gas stations (Johnston 1997: E:1-6).

The 1952 topographic map of the project area shows a portion of the Memphis Branch of the Louisville and Nashville Railroad and US 68 in the southern portion of the map (Figure 25). The railroad spur to White Stone Quarry is no longer reflected on the map. A quarry site located southeast of the main residence of Site 3 is indicated on the map. This is probably the Keystone Quarry. Residences and barns are found near the US 68 corridor and along secondary roads, with a few residences located off the main roads. Barns and locations of the residences indicate the rural nature of the area (United States Geological Survey 1952).

During and after World War II, industries began to establish roots in Bowling Green because of its location along the railroad and the availability of the local workforce. New industry and growth in its educational facilities, such as Western Kentucky University, brought about an increase in house construction and retail establishments. Ranch houses became the predominant house type constructed in the second half of the twentieth century. Figure 26 is an example of a Ranch house in the proposed project's APE. The construction of Interstate 65 in the 1960s and 70 mile Natcher Parkway (formerly the Green River Parkway) connecting Bowling Green and Owensboro in 1970 continued the county's industrial, retail, and residential prosperity (Kleber 1992:933; LABGWC 1984:16; Powell 1998:2-1). Warren County and Bowling Green continued to prosper in recent years as a regional health, retail, and industrial center as evidenced by the widening of Interstate 65, US 68, and the construction of an industrial park in the southern portion of the proposed project's APE.

Local Quarrying Industry

Stone quarrying became an important early industry in Warren County and the project area. Locally the White Stone Quarry opened as an early incarnation in 1833. A portion of the White Stone Quarry is located in the northeast portion of the proposed project's APE. The stone of the local quarries had a high content of oil which evaporated once the stone was cut and removed from the quarry. Once the oil evaporated, the stone bleached to a brilliant white. The locally quarried stone was easily cut and shaped and known for its strength as a building material. The original owner sold his interest in the quarry in 1856 to two local businessmen, Hugh E. Smith and William Carnes. In 1860 Smith purchased Carnes' interest in the quarry (Smith 1994:44-48; White Stone Quarry Company 1872:5).

A 30-year lease was signed by the Smith family with Owen Macdonald and Company to expand the land holdings of the quarry. A contingency of the lease was that the quarry company construct a railroad connection to the local railroad. The company constructed a railroad spur connecting the quarry property to the Memphis line of the Louisville and Nashville Railroad in early 1872. The railroad spur, approximately four miles in length, appears on the 1877 map of Warren County, Kentucky (Figure 19) (Beers and Lanagan 1877; Smith 1994:49-50; White Stone Quarry Company 1872:7-8). The location of the former railroad spur appears to be Old Tram Road which intersects US 68 and continues to the northwest. Owen Macdonald and Company transferred the lease to an English conglomerate. This conglomerate then transferred the lease to a subsidiary, White Stone Quarry Company (Smith 1994:49-50).

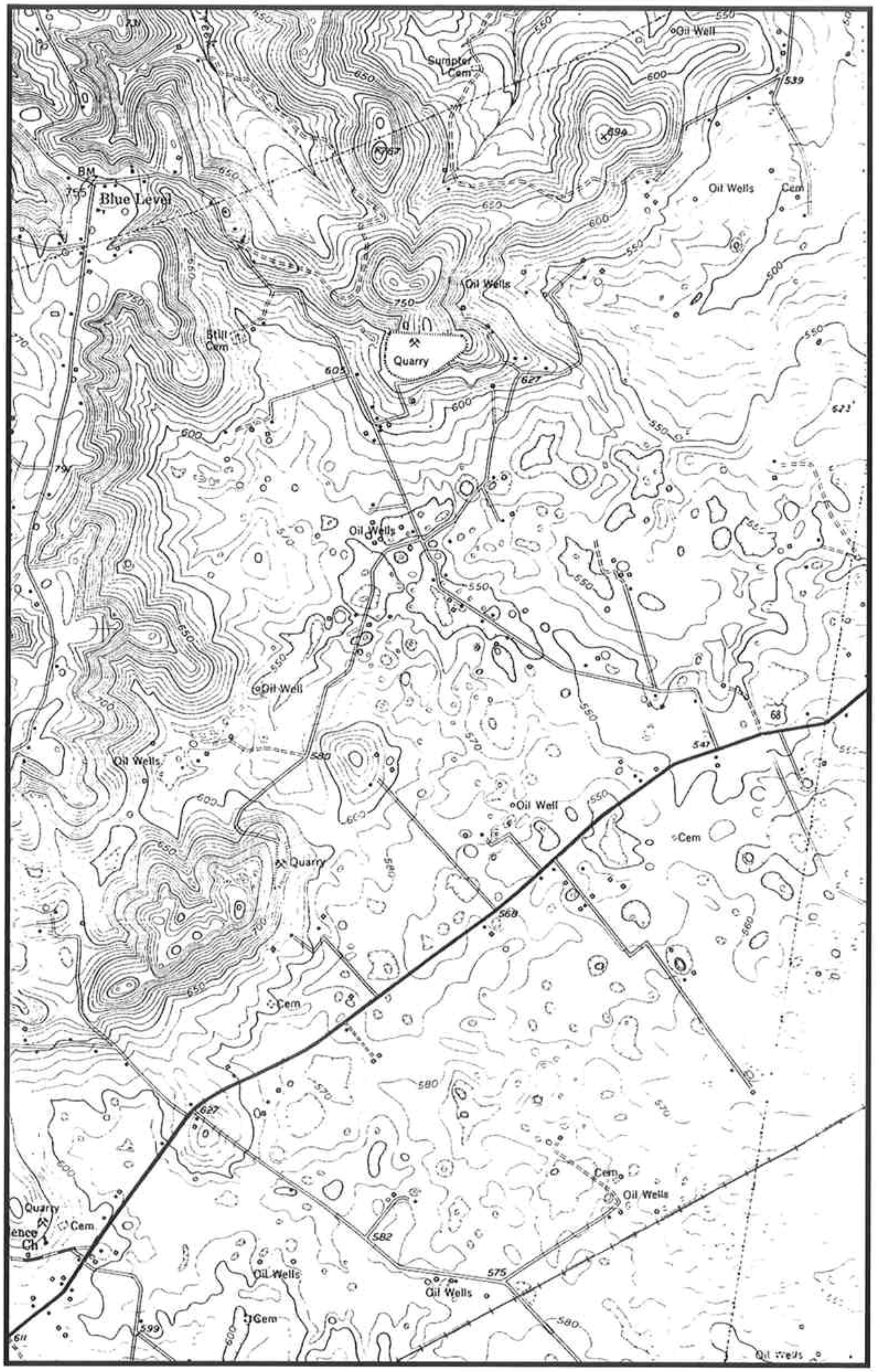

Figure 25. 1952 Rockfield, Kentucky, 7.5-minute series topographic map (USGS).

Figure 26. Example of Ranch house in APE.

Access to the railroad allowed the company to broaden its markets to Louisville, Memphis, Nashville, St. Louis, and Chicago. Ten cranes were utilized in the production of stone at the quarry by 1878. A steam powered stone saw mill was built at the quarry in 1880. According to Smith, the company provided housing for some of its workers near the quarry. The 1880 census indicates that approximately 69 percent of the laborers at the quarry consisted of African Americans. The White Stone Quarry Company purchased 117 acres adjacent to the quarry in 1884. The owner of the quarry, Belknap and Dumesnil Stone Company, began to have financial difficulties by the early 1890s. The quarry was sold to Bowling Green Stone Company after foreclosure by its creditors in 1892 (Smith 1994:50-53; White Stone Quarry Company 1872:8).

The 1891 Map of Warren County illustrates the number of quarries located in the southwest portion of the county near Russellville Pike (present-day US 68) (Figure 27). White Stone Quarry and its associated railroad spur are depicted on the map. Another quarry is illustrated northeast of White Stone Quarry. A quarry close to Russellville Pike that appears to be near Providence Church is also shown on the map. This quarry is also indicated on the 1952 topographic map (Figure 25). Stewart's Quarry is indicated along a railroad spur near the Logan County border. A few residences are also shown on the map southwest of White Stone Quarry and to the east of Blue Level-Providence Road (McAdoo and Hoeing 1891).

A gold metal was given to Bowling Green Stone at the 1893 World's Columbian Exposition held in Chicago. Even with this award and improvements made to the railroad spur by the Louisville and Nashville Railroad, the company continued to have financial difficulties. The quarry was again taken over by a creditor in 1900. The quarry was idled during most of 1900 as the creditor tried to locate a buyer for the property. The property was purchased, but the new owner lasted only a short time before attempting to resale the quarry. The Bowling Green White Stone Corporation of Delaware purchased the approximate 300 acres owned by the quarry.

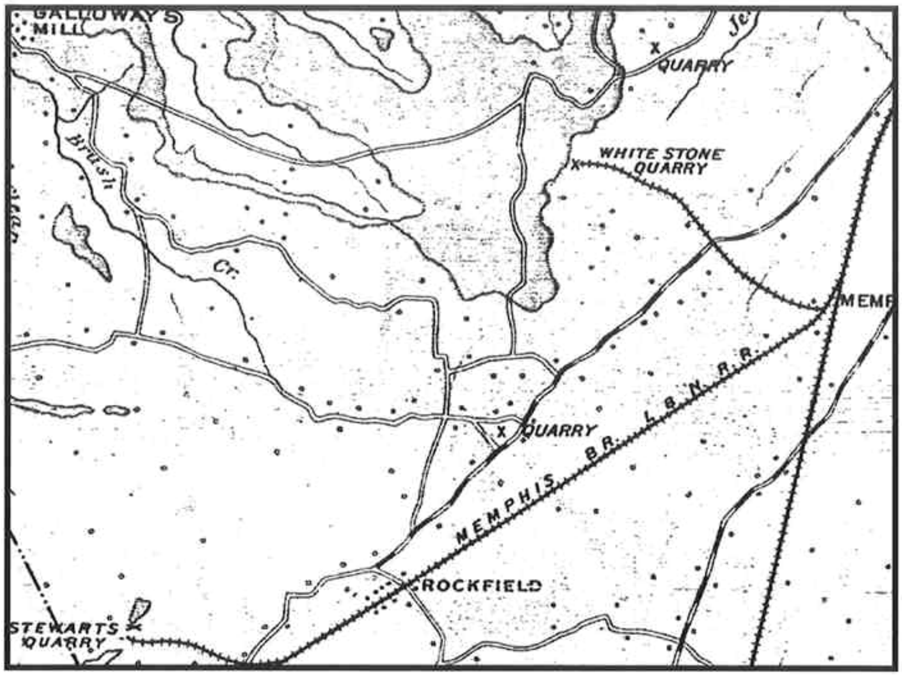

Figure 27. 1891 Map of Warren County, Kentucky (McAdoo and Hoeing).

This new operator joined with the Newsome Crushed Stone and Quarry Company to produce crushed stone in an effort to remove the lesser grades of stone and to reach new stone deposits located near the surface. Financial difficulties arose and the quarry was again taken over by a creditor in 1910 (Smith 1994:54-60).

The Bowling Green White Stone Company of Kentucky was formed to continue operating the quarry. From 1914 to 1920 five stone quarrying companies in Warren County consolidated their holdings, including Bowling Green White Stone Company, and formed the Bowling Green Quarries Company. Approximately 100 laborers worked at White Stone Quarry in the early to mid-1920s (Smith 1994:60-62). According to Richardson, there were 22 quarries in Warren County in 1923. The White Stone Quarry was approximately 800 ft by 500 ft in size. The desired stone averaged 20 ft in depth (Richardson 1923:238, 248). The Keystone Quarry, which appears to be the large quarry on Site 3 located in the APE near White Stone Quarry, was leased in 1923 by the J. L. McGinnis heirs for 99 years. Smith refers to Keystone Quarry as "newly opened." White Stone Quarry and Keystone Quarry were sold to the Southern Cut Stone Company in 1924. The White Stone Quarry closed in 1930 because of the lack of demand for building stone during the Great Depression (Smith 1994:67-68). Buildings utilizing stone from Warren County quarries for construction are found throughout the southeast, including: Gordon Wilson Hall on Western Kentucky University campus (Keystone Quarry); the arch and column wall of Ivan Wilson Amphitheater on Western Kentucky University campus (Keystone Quarry); Kentucky Governor's Mansion (Victoria Limestone Company Quarry); First Baptist Church, Bowling Green (since destroyed in fire) (White Stone Quarry); Speed Museum, Louisville; Seelbach Hotel, Louisville; United States Custom House, Nashville; Pulitzer Fountain, New York, New York; Odd Fellows Temple, Atlanta; Jewish Synagogue, Henderson, Kentucky; Illinois Central Railroad Offices, Jackson, Tennessee; and United States Government Buildings in Jackson, Mississippi, Gulfport, Mississippi, Jacksonville, Florida, and Pensacola, Florida (Richardson 1923:246-247; Smith 1994:71-72).

INVENTORY OF PREVOUSLY SURVEYED HISTORIC RESOURCES

The results of the cultural historic survey of previously surveyed sites are presented in Table 1 and mapped on Figure 2. Each of the surveyed historic sites (at least 50 years old) is described below. Each site has been assessed to determine if it appears eligible for the NRHP. Evaluations are found after each description. For those sites listed in or eligible for the NRHP, the proposed boundaries are provided. Survey forms with negatives for each site are included with the report.

Site 1

KHC Survey #: WA-318

Photographs: Figures 28-30

Map: Figure 2

Zone: 16

Quad: Rockfield, KY 1973 (Photo Inspected 1979)

UTMs: E: 540943, N: 4092354

Description: This is the White Stone Quarry Baptist Church located in the community of Blue Level (Figure 28). The middle structure is the historic portion of the church. According to a cornerstone, the church was established in 1876. The church, oriented to the south, is located on the north side of Blue Level Road. The original portion of the church is a one-story, two-bay (d/d), front-gable structure (Figure 29). The building was clad in brick veneer in approximately 1958. The brick cladding extends to grade. According to a local resident, the rear Sunday School rooms were added at the same time. A gable-roof porch shelters the two single-leaf entries of the façade. The entries appear to have replacement doors. This porch is supported by non-historic aluminum posts resting on a poured concrete deck. White brick laid in the pattern of a cross is located over the ridgeline of the porch near the apex of the façade gable. Four bays are found on the west elevation of the church. These bays appear to have replacement window sashes. A cornerstone indicates the new sanctuary to the west of the original church structure was constructed in 1996. To the east of the original church structure is a side-gable non-historic addition that may contain additional Sunday School classrooms. Both additions are connected to the side elevations of the original church structure.

Figure 30 is a view of the rear elevation of the church. To the right is the rear elevation of the new sanctuary. The rear elevations of the original church structure and the non-historic Sunday School classroom addition to the east are clad in vinyl siding. The siding continues to grade. This is probably the addition constructed in 1958. A small single-leaf entry is located near the apex of the rear elevation of the original portion of the church. The portion of the rear addition directly to the rear of the church has a gable-roof configuration. Below the gable-roof configuration is a single-leaf entry with a replacement door. A poured concrete ramp with a metal railing leads to the entry. The roof is sheathed in asphalt shingles.

Table 1. Cultural historic sites (50 years or older).

CRA Site #	KHC Site #	Building Type	NRHP Eligibility	Photo Fig. #
1	WA-318	White Stone Quarry Baptist Church	No	28-30
2	WA-325	Blue Level Missionary Church	No	31-33
3	WA-135	Joseph Price Perkins House	No	34-86
4	WA-132	Gladdish-Asher House	Eligible	87-106
5	WA-131	2-story, 5-bay log house with modifications	No	107-109

Figure 28. Site 1, White Stone Quarry Baptist Church (WA-318).

Figure 29. Site 1, Façade and west elevation of original portion of church.

Figure 30. Site 1, Rear elevation showing addition to original portion of church.

NRHP Evaluation: Not Eligible. The National Register Bulletin: How to Apply the National Register Criteria for Evaluation states that under Criterion Consideration A, "A religious property requires justification on architectural, artistic, or historic grounds to avoid any appearance of judgment by government about the validity of any religion or belief" (National Park Service 1997:26). The White Stone Quarry Baptist Church does not embody the distinctive characteristics of a style, method, or period of construction. In addition, the White Stone Quarry Baptist Church has a number of alterations, including the replacement windows, replacement doors, brick cladding, vinyl siding, an addition to the rear, and large non-historic additions to the east and west. The alterations to the structure compromise the historic qualities of design, setting, materials, workmanship, and feeling necessary to convey its significance. Research revealed no associations with significant persons or events in history related to this site. As a result, this site does not appear eligible for inclusion in the NRHP under Criterion A, B, or C.

Site 2

KHC Survey #: WA-325

Photographs: Figures 31-33

Map: Figure 2

Zone: 16

Quad: Rockfield, KY 1973 (Photo Inspected 1979)

UTMs: E: 541476, N: 4092016

Description: This is the Blue Level Missionary Church located on Carpenter Lane on the northeast side of Blue Level Road (Figure 31). The church is southeast of the crossroads community of Blue Level. The church, oriented to the southwest, is a one-story, two-bay, front-gable, frame structure with alterations. The gable-roof vestibule has been enlarged with the apex of the roof projecting from the façade wall plane. A single-leaf entry with a modern door and side-lights is found along the right portion of the façade. Poured concrete steps lead to the poured concrete porch deck with metal railings. To the left of the entry are three, modern, narrow single-light windows that basically consist of one bay. A window with modern six-over-six double-hung sashes is found on both the southeast and northwest elevations of the vestibule. The front portion of the vestibule rests on a parged foundation. The rear portion of the vestibule rests on a stone foundation as does the remainder of the original portion of the church. Three bays are found on both the southeast and northwest elevations of the church. The windows have four-over-four double-hung sashes. An exterior brick chimney resting on a poured concrete foundation is located on the northwest elevation of the church (Figure 32). Directly to the rear of the church is an addition which may be historic. The northwest elevation of the addition, which is flush with the wall plane of the original church structure, has a single-leaf entry with a replacement door. An addition is also located at the rear east corner, projecting from the southeast wall plane of the original portion of the church (Figure 33). A poured concrete ramp with a stone foundation leads to the single-leaf entry on the southwest elevation of the addition. The windows of the addition have single-over-single double-hung sashes. The addition rests on a concrete block foundation. The roof of the church is sheathed in asphalt shingles. The church is clad in aluminum siding. The window surrounds are clad in aluminum. The original portion of the church rests on a stone foundation with grapevine mortar joints. Two churches appear on the 1928 oil and gas map (Figure 24) near this location. It is assumed the Blue Level Missionary Church is one of the churches indicated on the 1928 map. The church was previously surveyed in 1997. The address listed for the church on the previous survey form is 2336 Blue Level Road. The previous survey form states the church was constructed in 1907. One rear addition was constructed in 1964 while the front vestibule addition was built in 1977. The church appears much the same currently as in the photographs of the 1997 survey (KHC Survey and National Register files). Although it does not appear to be historic, an open-sided picnic pavilion supported by wood posts resting on a poured concrete floor is located to the southeast of the church.

Figure 31. Site 2, Blue Level Missionary Church (WA-325).

Figure 32. Site 2, Façade and northwest elevations of the church.

Figure 33. Site 2, Southeast elevation of rear addition.

NRHP Evaluation: Not Eligible. The National Register Bulletin: How to Apply the National Register Criteria for Evaluation states that under Criterion Consideration A, "A religious property requires justification on architectural, artistic, or historic grounds to avoid any appearance of judgment by government about the validity of any religion or belief" (National Park Service 1997:26). The Blue Level Missionary Church does not appear to be eligible for listing in the NRHP. The Blue Level Missionary Church has a number of alterations, including the replacement doors, aluminum siding, modern windows of the vestibule, the enlargement of the vestibule, and rear addition. The alterations to the structure compromise the historic qualities of design, materials, workmanship, and feeling necessary for the site to convey its significance. Research revealed no associations with significant persons or events in history related to this site. As a result, this site does not appear eligible for inclusion in the NRHP under Criterion A, B, or C.

Site 3

KHC Survey #: WA-135

Photographs: Figures 34-86

Map: Figure 2

Zone: 16

Quad: Rockfield, KY 1973 (Photo Inspected 1979)

UTMs: E: 541260, N: 4089518

Description: This site, currently known as the Keystone Farm, has a number of associated structures and features. Figure 34 is an aerial included to better understand the locations of the structures and features of this site. The structures and features are identified on Figure 34 by alphabetic letters. An approximate boundary of land owned by the current owners is included on the aerial. The property contains approximately 350 acres. The current boundaries of the property were approximated from the report by Sharp (Sharp 2006:n.p.). The main house (Resource A) located on this site is a two-story, five-bay (w/w/d/w/w), side-gable I-house with alterations (Figure 35).

The house, oriented to the south, is located near the terminus of a long private drive at the end of L. C. Carr Road. The centered, single-leaf entry retains a historic door and four-light sidelights and a five-light transom (Figure 36). The door surround is a vernacular variation of the Greek Revival style, with wood blocks providing the appearance of pilasters. The entry has a stone sill and is flanked by non-functional shutters. The porch is constructed of ashlar stone. The windows of the main block of the house have six-over-six double-hung sashes. A plain frieze is found between the cornice and the top of the upper story windows. This frieze extends slightly to the gable ends. Each gable end of the original block of the house has raking cornices. Exterior ashlar stone chimneys are found at each gable end of the main block of the house. The first floor rooms have fireplaces with cut stone hearths and fireplace surrounds.

The stone for the fireplaces and chimneys may have been quarried on the farm. The interior of the main block of the house has a stairway in the central hall and a secondary staircase in the rooms to the east with a newel post matching that of the main stairs. Hand hewn floor joists were exposed during a recent repair to the first floor of the house (Sharp 2006:n.p.). The house also has corner boards. Additions to the house were constructed in the 1960s (Sharp 2006: n.p.). The east gable end has a gable-roof addition constructed to the rear of the exterior stone chimney (Figure 37). A window on the south elevation has sashes similar to those of the façade. A ribbon of three large windows almost extending to near grade is found on the east gable end of the addition. The windows have six-over-six double hung sashes A gable-roof wing addition is located along the west gable end of the original block of the house to the rear of the exterior stone chimney (Figure 38). A window on the south elevation is similar to those of the façade. The west elevation of the one-and-one-half-story addition has a single-leaf entry with a multi-light door (Figure 39).

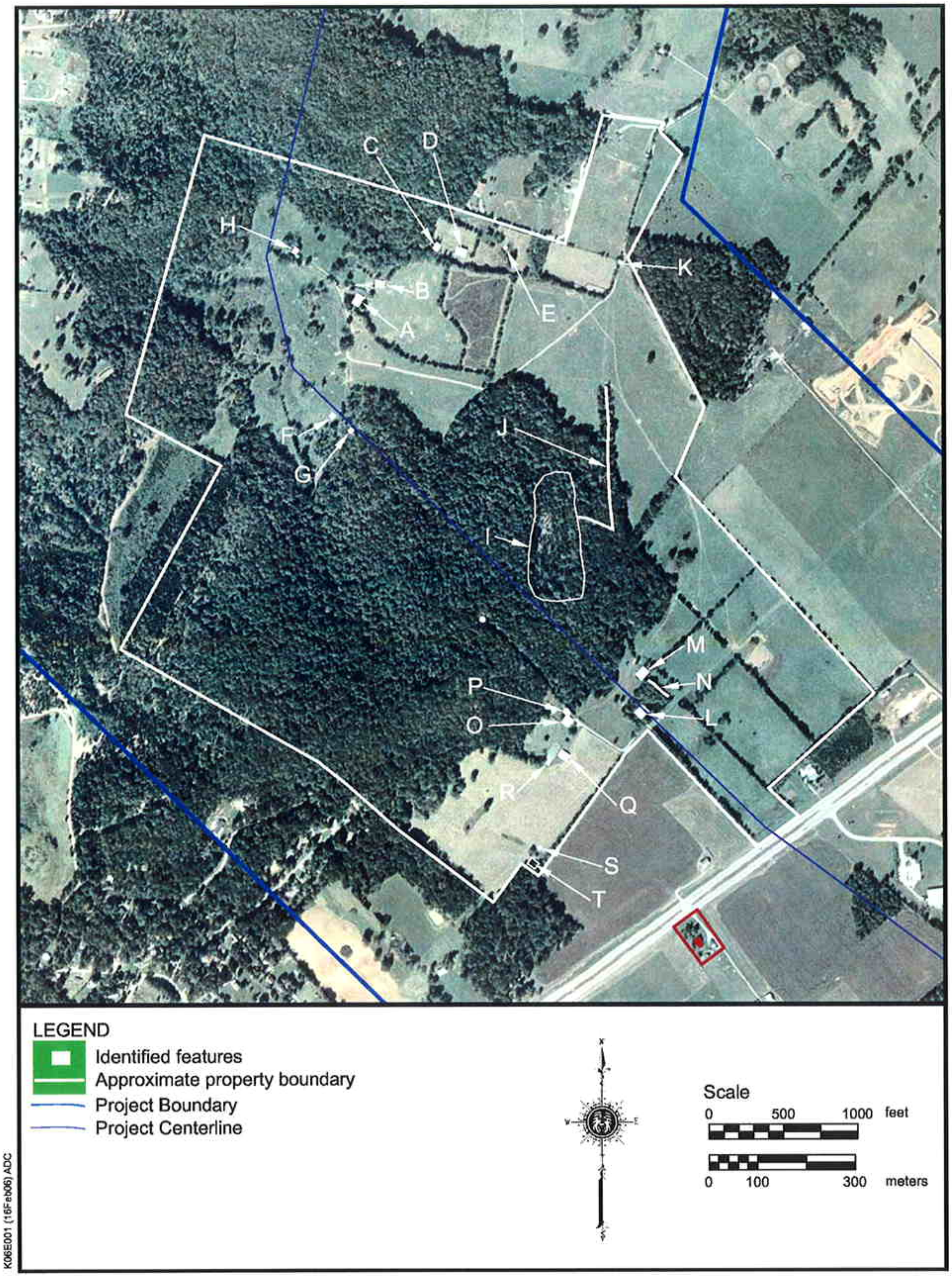

Figure 34. Site 3, Aerial photograph showing locations of resources.

Figure 35. Site 3, Joseph Price Perkins house on Keystone Farm (WA-135).

Figure 36. Site 3, Detail of façade entry.

Figure 37. Site 3, Façade and east elevation showing east wing.

Figure 38. Site 3, Façade and west elevation showing west wing.

Figure 39. Site 3, West elevation of house showing west wing.

The entry is flanked by windows with eight-over-twelve double-hung sashes. A window near the apex of the gable has two-over-two double-hung sashes. The frieze of the two wing additions mimics that of the main block of the house. The façade and gable ends of the wing additions are clad in aluminum siding and rest on a poured concrete foundation. The original block of the house has a two-story flat-roof addition along the rear of the house. This addition extends approximately two-thirds of the width of the house from the east corner of the original block to the west. Figure 40 shows the rear elevation of the west wing and the shed-roof enclosed walkway from the flat-roof addition to the west wing. The rear elevation of the west wing has a window with six-over-six double-hung sashes and is clad in brick veneer. The shed-roof enclosed walkway has a ribbon of windows extending from the floor to the roof with nine-over-nine double-hung sashes. To the left (east) of the shed-roof enclosed walkway is a large, one-story addition with a mansard roof clad in metal. Finials are located along the mansard roof. The addition includes a vestibule with a single-leaf recessed entry with a transom and a paneled reveal (Figure 41).

Non-functioning shutters are found with most of the windows and entries. A number of the window sashes of the addition have non-historic textured glass. To the immediate west of the vestibule is an exterior brick chimney with some stone detailing (Figure 42). A four-sided portion projects from the rear of the addition to the northeast. Figure 40 also shows the rear elevation of the east wing which is clad in brick veneer. An exterior brick chimney constructed of ashlar stone is located along the rear elevation of the east wing. A brick patio is located to the rear of the east wing and east of the rear addition. The roof of the original block and wings is sheathed in modern metal panels. The original block is clad in weatherboard siding. The original block of the house appears to rest on a stone foundation, although the siding extends close to grade.

Figure 40. Site 3, West portion of rear elevation showing west wing.

Figure 41. Site 3, Rear elevation of main residence looking southeast.

Figure 42. Site 3, Rear elevation of main residence southwest.

This house was previously surveyed in 1980. The survey form states the house is of frame construction with a standing seam metal roof. The form also states the side and rear twentieth century additions were in existence at the time (KHC Survey and National Register files). The 1877 atlas depicts the "P. Perkins" residence southwest of what may be a portion of Blue Level Road (Figure 19). The house and a drive to the residence are depicted on the 1928 oil and gas map of Warren County (Figure 24). This house appears on the 1952 topographic map (Figure 25). Although the drive to the large quarry on the property is indicated on the map, the current drive to the house is not shown on the 1952 map.

A number of outbuildings and features are located on the property. To the immediate northeast (rear) of the house is a non-historic, pyramidal-roof gazebo with open sides. The roof is sheathed in slate shingles. The gazebo is supported by decorative metal posts and wood posts.

Northeast of the house is a frame, front-gable barn (Resource B) (Figure 43). A flat-roof shed with open sides supported by wood posts with a prefabricated metal roof has been added to the west gable end of the barn. The barn is constructed of sawn lumber (Figure 44). Portions of the interior appear to have been recycled, with mortise elements visible in some of the framing members. The roof is sheathed in corrugated metal panels. The barn, which is currently utilized as a livestock barn, is clad in vertical boards. This barn appears on the 1952 topographic map (Figure 25).

A frame barn encasing a log barn is located to the northeast of the previous barn (Resource C) (Figure 45). The larger barn is basically a pole barn although the log barn may provide support for the roof. The barn has an opening along both the northwest and southeast elevations. The roof is sheathed in prefabricated metal panels. The exterior of the barn is clad in vertical boards and it rests on a poured concrete pier foundation. The log barn encased inside the pole barn exhibits both saddle and v-notching construction (Figure 46). Bark is retained on both the upper and undersides of a number of the logs.

Figure 43. Site 3, Small barn (Resource B) looking northeast.

Figure 44. Site 3, Interior framing of barn.

Figure 45. Site 3, Barn incasing log barn (Resource C) looking northwest.

Figure 46. Site 3, Detail of log barn construction.

The ends of the logs are cut smooth as are portions of the sides of the logs. Hand hewn marks are visible in places along the logs (Figure 47). A low pedestrian entry is located along the southwest elevation. A door constructed of vertical boards with Z-bracing is lying in front of the pedestrian entry of the log barn. An opening has been cut in the fifth and sixth logs above the pedestrian entry. Bracing has been added to help support the log barn (Figure 48). The log barn rests on a stone pier foundation. A portion of the log barn is visible from the exterior of the encasing barn as it is pushing against the supporting northeast gable wall of the encasing barn (Figure 49). This barn appears on the 1952 topographic map (Figure 25).

East of the encased log barn is a frame tobacco barn (Resource D) (Figure 50). The gable ends of the barn are oriented to the northwest/southeast. Three double-leaf entries are located at each gable end. The barn has two levels of ten vents along its sides. The barn is constructed of nailed sawn lumber (Figure 51). The roof is sheathed in prefabricated metal panels. The barn is clad in vertical boards and rests on a poured concrete pier foundation. A continuous poured concrete foundation is found along the sides of the barn. This barn does not appear on the 1952 topographic map (Figure 25), therefore it is doubtful the barn is over 50 years of age. The 1928 oil and gas map of Warren County illustrates the lane leading to the encased log barn and tobacco barn (Figure 24). Three structures are shown along or near the lane. Usually structures indicated on the oil and gas map are residences, but in this case it is unclear if the map is depicting residences or barns.

East of the tobacco barn is a low concrete block outbuilding that may have served as a pump house for a well (Resource E) (Figure 52). The top of the structure is partially covered by prefabricated metal panels. This may have served as a well house for one of the residences indicated on the 1928 oil and gas map, although this is speculative.

Figure 47. Site 3, View of log barn looking southeast.

Figure 48. Site 3, Southeast elevation of log barn showing additional bracing.

Figure 49. Site 3, Northwest and northeast elevations of barn.

Figure 50. Site 3, Northwest and southwest elevations of tobacco barn (Resource D).

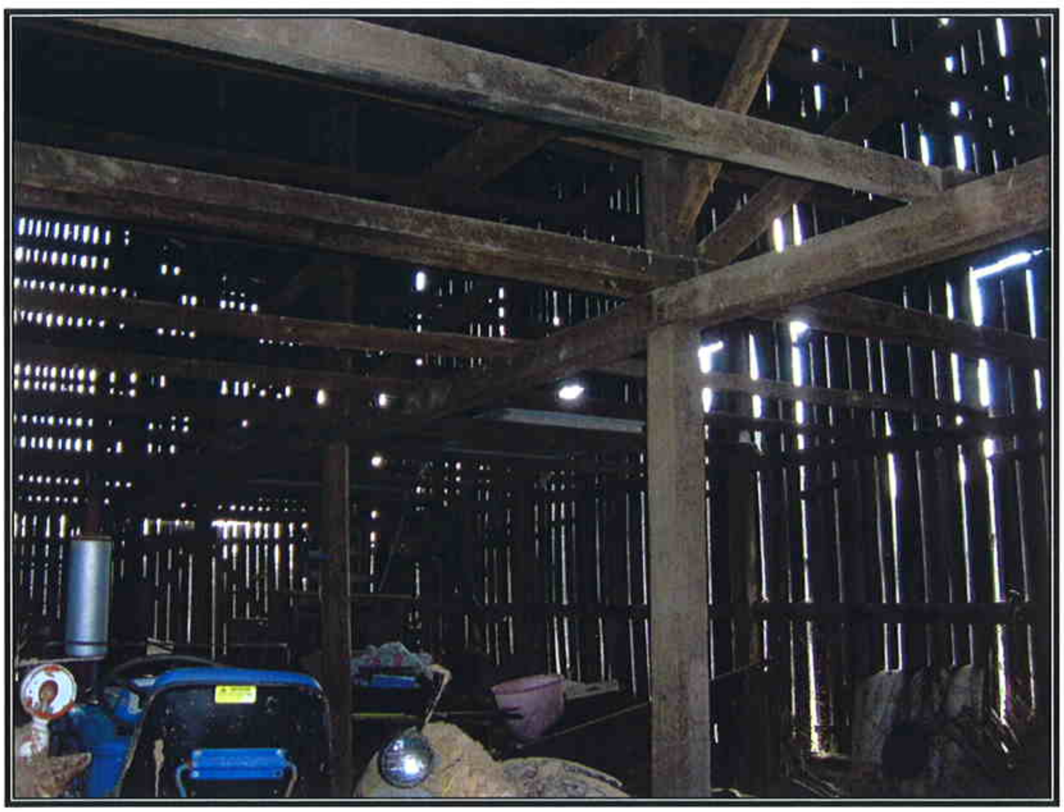

Figure 51. Site 3, Framing of tobacco barn.

Figure 52. Site 3, Concrete block outbuilding (Resource E), possibly a well pump house.

Both the 1928 oil and gas map (Figure 24) and the 1952 topographic map (Figure 25) illustrates oil wells on the property and in the vicinity. Emily Perkins Sharp stated during the survey of the site that there are two operating oil wells located on the property.

A second concrete block structure that appears to be a pump house for a well is found south of the main house, south of the drive near the woods (Resource F) (Figure 53). The roof is composed of metal placed across the top of the structure.

Southeast of the previous pump house is a mortared rubble stone springhouse constructed along a hill side in the woods (Resource G) (Figure 54). A new frame shed roof has been constructed to raise the roof to better accommodate entry into the springhouse. The new frame roof is clad in metal. Entry into the springhouse is through a wood door. A shallow pool of water is found inside the springhouse (Figure 55).

A one-and-one-half-story, two-bay (d/w) secondary residence with an "L-shape" is located at the terminus of the driveway to the northwest of the main house (Resource H) (Figure 56). The house is oriented to the southeast. The secondary residence appears to originally have been a one-and-one-half-story side-gable house that has been modified. The single-leaf entry, which has a multi-light door, is located along a shed-roof enclosed porch. The entry opens onto a poured concrete porch deck. A possible window bay is located on the southwest elevation of the enclosed porch, but is currently covered in black plastic. The gable-roof cross-gable addition is located to the right of the entry along the façade. It is unclear whether or not this addition is historic. Paired windows with six-over-six double-hung sashes are found on the façade gable end of the addition. The majority of windows have the same type of sashes. The northeast elevation of the addition, which also has a window, is set back from the northeast elevation of the original portion of the house (Figure 57).

Figure 53. Site 3, Concrete block outbuilding (Resource F), possibly a well pump house.

Figure 54. Site 3, Stone springhouse with raised roof (Resource G).

Figure 55. Site 3, Interior of stone springhouse.

Figure 56. Site 3, Façade and southwest elevations of secondary residence (Resource H).

Figure 57. Site 3, Façade and northeast elevations of secondary residence.

The northeast gable end of the original portion of the house has a window along the main floor and a second window near the apex of the gable. The southwest elevation of the house has paired windows and a window near the apex of the gable (Figure 58). A single-leaf entry is found on the rear elevation of the house. A brick chimney pierces the ridgeline of the original portion of the house. The roof is sheathed in asphalt shingles. The house is clad in aluminum siding that almost extends to grade. A stone foundation is visible along portions of the house. Yeager states that a log house was located at the terminus of Keystone Road in 1977. Yeager also states that the property was known as the "Thompson-Perkins Lodge" (Yeager 1977:74). Yeager may be describing this secondary residence. A shed-roof frame outbuilding that is in near ruinous condition is located to the rear of the tenant house. The outbuilding is partially clad in vertical boards and portions of the roof are sheathed in prefabricated metal panels.

During the survey of the site, Emily Perkins Sharp stated that five quarries of varying size have been located along the hills on the property. Sharp further stated a drill bit was left in the rock at one of the quarries. No quarries are illustrated on the property on the 1877 atlas of Warren County (Figure 19). No quarries are depicted on this site on the 1891 map of Warren County (Figure 27). Two quarries are indicated on the property to the south and southeast of the main house on the 1928 oil and gas map (Figure 24). The map also appears to indicate the existence of one or two structures adjacent to the largest of the quarries. Only the largest quarry is illustrated on the 1952 topographic map (Figure 25). No structures associated with the quarry are indicated on the map. The largest quarry is located to the southeast of the house (Resource I). It is surmised that this is the Keystone Quarry that opened in the early 1920s. The smaller quarries on the property may or may not have been associated with the Keystone Quarry. A former road to the quarry is visible crossing a field to a wooded section that projects from the woods of the hill (Resource J) (Figure 59). This former road appears to extend to the current gravel lane on the property near the entry gate to the property.

Figure 58. Site 3, Southwest and rear elevations of secondary residence.

Figure 59. Site 3, View to northeast from road to quarry (Resource J) to open field.

The former quarry road may be indicated on the 1928 oil and gas map (Figure 24) but is not shown on the 1952 topographic map (Figure 25). A second road to the quarry is illustrated on 1928 oil and gas map and the 1952 and current topographic maps (Figures 24, 25, and 2). The portion of the road extending through the woods toward the quarry is rutted in places and pieces of stone from the quarry are found to either side of the former road (Figure 60). The former road intersects another road that is in better condition. This road leads past the quarry to a water tank currently in use that is located to the southwest of the quarry. The quarry itself has a vertical wall along the west side that appears to be 15 feet or more in height (Figures 61 and 62). Near the southern end of the quarry are large and irregular stones, probably waste material (Figure 63). A large portion of the quarry floor is relatively flat, with exposed stone on the surface. Examples of quarrying methods are easily visible, including drill holes for the placement of wedges to split the stone away from the ledge (Figure 64), the remains of long horizontal cuts in the rock (Figure 65), and the base possibly for a piece of equipment (Figure 66).

Brick entry posts attached to a decorative metal arch serves as the entrance to the site from off L. C. Carr Road (Resource K) (Figure 67). Historic metal gate posts, possibly brought to the site at the time of the additions to the main residence, are attached to the interior of the gate posts. Attached to the gateposts are plaques stating "Keystone Farm." The entry was probably constructed in the 1960s at the same time as the additions to the main house. In the left portion of the figure is the projection of the woods indicating the historic quarry road described above.

The current owners of the site also own adjacent property that extends to US 68 (Russellville Road). Located at the end of a long drive is a stone foundation of a former house (Resource L) (Figure 68). The mortared rubble stone foundation has grapevine mortar joints. Poured concrete steps are found along the front of the house. Beside the steps is a large metal casement window that accommodated 20 lights. Sharp stated during the survey that the house burned in the late 1960s or early 1970s. A well purportedly was located to the front of the house, although only scattered lumber on the ground indicates its location. Located to the rear of the house are the walls of a former garage (Figure 69).

Figure 60. Site 3, View along stone quarry road.

Figure 61. Site 3, View in quarry (Resource I) to vertical wall.

Figure 62. Site 3, View in quarry to vertical wall.

Figure 63. Site 3, View near the southern portion of the quarry.

Figure 64. Site 3, Drill holes visible in quarry.

Figure 65. Site 3, Horizontal cuts visible in quarry.

Figure 66. Site 3, Remains of possible base for equipment in quarry.

Figure 67. Site 3, Brick entry posts onto Keystone Farm (Resource K).

Figure 68. Site 3, Southwest and rear elevations of foundation of former house (Resource L).

Figure 69. Site 3, Stone walls of former garage.

The garage and former house were oriented to the southeast. The garage walls are of mortared rubble stone construction. The garage entry to the left has a steel lintel. A pedestrian entry is located to the right. The floor of the pedestrian side has a stone-lined trench located in the floor (Figure 70). It is unclear what purpose this room or trench served. A vertical joint on the rear elevation of the garage indicates one side was possibly an addition (Figure 71). The construction methods of the garage and house foundation as well as the metal casement window frame suggest the house was constructed in the first half of the twentieth century. There was speculation that the residence may be associated with the Keystone Quarry, but no evidence of this supposition was uncovered during research for this letter report. The remains of a shed-roof outbuilding of box-frame construction is located to the rear of the garage. The majority of two of the walls of the outbuilding have collapsed. Portions of the outbuilding's vertical board construction are clad in rolled asphalt in a brick pattern. Northeast of the foundation of the former house is a frame livestock barn (Resource M) (Figure 72). The remains of a hay hood are visible along the southeast elevation of the barn. The barn is constructed of nailed sawn lumber (Figure 73). The roof is sheathed in prefabricated metal panels. The middle portion of the barn's roof has wood board sheathing under the prefabricated metal. The southwest portion of the barn is clad in corrugated metal panels. The remainder of the barn is clad in vertical boards. The exterior walls of the barn rest on either concrete block or poured concrete foundations. The interior vertical support members rest on replacement poured concrete piers. An original stone pier is visible in the middle portion of the barn. The possible remnants of an old lane appear to be located along the west side of the tree line/fence row to the front of the barn extending in the direction of US 68 (Resource N) (Russellville Road). A house appears on or near the site of the foundation on the 1928 oil and gas map (Figure 24). The house and the barn are depicted on the 1952 topographic map (Figure 25).

Figure 70. Site 3, Stone lined trench in northeast portion of garage.

Figure 71. Site 3, Northeast and rear elevations of former garage.

Figure 72. Site 3, Livestock barn (Resource M) looking to the northeast.

Figure 73. Site 3, Interior framing of barn.

The lane leading to the prior house foundation curves to the southwest and then to the northwest before its terminus at two residences constructed of similar materials in close proximity to one another. The first house is a one-story, three-bay (w/d/w), side-gable house with a rubble stone exterior and a probable addition (Resource O) (Figure 74). The residence, which is similar in form to a Ranch house, is oriented to the southeast. A gable-roof porch, supported by decorative metal posts resting on a poured concrete deck, shelters the single-leaf entry and window to the right of the entry. The entry has a multi-light door. The window to the right of the entry has horizontal two-over-two double-hung sashes. The majority of the windows in the house have the same type of sashes. The picture window to the left of the entry has two-over-two double-hung sashes as sidelights. The northeast gable end elevation has two windows. The rear elevation has a shed-roof porch extending the width of the one-story portion of the house (Figure 75).

The porch is supported by square wood posts resting on a poured concrete deck. The porch roof appears to be a corrugated plastic material. The rear elevation has a single-leaf entry and three windows. The southwest elevation of the house has a one-story frame portion resting on a walk-out basement (Figure 76). This appears to be a later addition to the house. The basement façade of the addition has a rubble stone exterior and what may have originally been a garage entry. This entry has been filled with single-light horizontal sliding patio doors and possibly wood to the sides of the door frame. The rear and southwest elevations of the basement are constructed of concrete block. An exterior single-leaf basement entry is located near the rear of the house on the southwest elevation. The window sashes of the addition are the same as found throughout the house. The upper story of the addition is clad in asbestos shingles. A stone chimney pierces the front roof slope of the addition. The roof is sheathed in asphalt shingles. The majority of the stone exterior has grapevine mortar joints, although portions have been repointed or repaired and no longer retain the earlier mortar joints. The stone continues to grade and the foundation material could not be determined. A second house is located to the northeast and adjacent to the previous house. This is a one-story, three-bay (w/d/w), front-gable residence with a stone exterior constructed with grapevine mortar joints (Resource P) (Figure 77).

Figure 74. Site 3, One-story, three-bay, side-gable house with stone exterior (Resource O).

Figure 75. Site 3, Rear elevation of house.

Figure 76. Site 3, Façade and southwest elevations of house.

Figure 77. Site 3, One-story, three-bay, front-gable house with stone exterior (Resource P).

The house is oriented to the southeast. A gable-roof porch, extending over the three façade bays, is supported by decorative metal posts resting on a poured concrete deck. The porch also has a metal railing. The centered entry has a three-light door. The windows flanking the entry have adjustable glass louvers which may not date to the construction of the house. The southwest elevation has three windows with either six-over-six or horizontal two-over-two double-hung sashes (Figure 78). The rear elevation has a single-leaf entry sheltered by a gable-roof porch supported by wood brackets. To the left of the rear entry is a window with adjustable glass louvers. The roof is sheathed in asphalt shingles. The foundation material could not be determined as the stone exterior continues to grade. A large transverse crib livestock barn is located to the south of the previous two residences (Resource Q) (Figure 79).

The construction of the barn is much like a pole barn, with tree trunks and sawn lumber serving as vertical and horizontal members (Figure 80). The roof of the barn is sheathed in metal. The barn is clad in vertical boards and rests on a poured concrete foundation. A small, three-bay (w/d/w), side-gable, frame outbuilding is located to the west of the barn adjacent to a pond (Resource R) (Figure 81). The façade has a centered single-leaf entry flanked by windows with two-over-single double-hung sashes. The door is leaning against an interior wall. No lights remain in the sashes. The interior walls are sheathed in bead boards. The outbuilding has exposed rafter tails. The roof, which is partially in ruinous condition, is sheathed in asphalt shingles (Figure 82). Portions of the weatherboard siding are also missing. The outbuilding appears to rest on grade.

Figure 78. Site 3, Southwest and rear elevations of house.

Figure 79. Site 3, Transverse crib livestock barn (Resource Q).

Figure 80. Site 3, Interior of barn.

Figure 81. Site 3, One-story, three-bay, side-gable, frame outbuilding (Resource R).

Figure 82. Site 3, Southeast and rear elevations of the outbuilding.

Some distance to the southwest from the small outbuilding and barn is a depression along a fence line. Located in the depression similar to a sink hole is an exposed round structure constructed of mortared stone (Resource S) (Figure 83). This structure appears to be a well, as the interior continues below grade. Southwest and a short distance from the well is a cemetery (Resource T) that according to Emily Perkins Sharp was associated with a non-extant church, the Union Grove Church. According to Sharp, Stephen Perkins and his wife Joanna Perkins are buried in the cemetery. Sharp also states that Joseph Price Perkins, who constructed the main residence on this site, his wife and a number of children are buried in the cemetery (Sharp 2006:n.p.). The cemetery is overgrown with trees and ground cover (Figures 84 and 85). A wire fence crosses through the cemetery. A pedestrian survey of the cemetery indicates only a few visible headstones and footstones. Some of the stones are broken or leaning against trees. Some of the stones were not legible. A number of unidentified and unmarked interments could be located in the cemetery. The legible surnames in the cemetery include Perkins and Williams(?). The legible burials date to the last two decades of the nineteenth century and early twentieth century. Neither the church nor the cemetery is illustrated on the 1877 atlas (Figure 19). The cemetery and church are not depicted on the 1928 oil and gas map (Figure 24). The cemetery is shown on the 1952 topographic map (Figure 25).

Sumpter states the main house on the property was constructed by Joseph Price Perkins after his marriage to Elizabeth Price in 1835. Joseph Price Perkins, born circa 1810, was the son of Stephen and Joanna Perkins. Stephen Perkins and his wife moved from Virginia to Kentucky about 1807. In the 1810 census, Stephen and Joanna Perkins are shown to live in Rockcastle County. The couple appears to be living in Warren County possibly by 1820. Stephen Perkins purportedly owned a large amount of acreage along present-day US 68. The couple is purportedly buried in a family cemetery on this land. Joseph Price Perkins and wife Elizabeth raised ten children in the home (Sumpter 1991:168; WCGS and SKGS 1991:180).

Figure 83. Site 3, Probable stone well (Resource S).

Figure 84. Site 3, View of portion of cemetery (Resource T).

Figure 85. Site 3, Detail of cemetery.

The 1850 census indicates Joseph Price Perkins and his family were living in the first district of Warren County. Perkins listed his occupation as farming. Joseph Price Perkins was 40 years old (his birth date is listed in different sources as 1809 or 1810). The census states he married Elizabeth Perkins in August 1836. The 30 year old Elizabeth was born in 1820. Five children were living in the house at the time of the census: Louisa V., age 11 (married George F. Arnold in 1857); Benjamin F., age 9 (married Lucy [?] in 1869); James Thomas, age 7; Sarah Ann, age 6 (married to John Read as of 1865); and Oscar, age 1 (married Dila Manning in 1878) (MyFamily.com 1850 census; Reid 1993:82-83). The 1850 slave schedule indicates Joseph P. Perkins, who was living in the first district of Warren County, owned three slaves: a 13 year old male and two females, 17 and 6 years old. The slave schedule does not list names for the slaves (MyFamily.com 1850 slave schedule).

Joseph Price Perkins continued to list his occupation as farmer in the 1860 census. By this time he was at least 50 years old. His real estate was valued at $7,020 and his personal property was worth $3,825. Family members living in the house with Joseph Price and his wife Elizabeth, age 40, included 10 children. The children listed in the census are: Benjamin (farmhand); Louisa, age 22; James Thomas (farmhand); Sarah Ann; Oscar; Hannibal, age 8 (died in 1867); Danzella "Donnie," age 6 (married Thomas J. Smith in 1875); Isadore "Dora," age 5 (married A. B. Sandidge in 1879); Lillian "Lillie," 2 years of age (married James T. Royster in 1893); and Hester, less than a year old. Adjacent surnames on the same page of the census include Smith, Sumpter, Taylor, and Sublett (MyFamily.com 1860 census; Reid 1986: n.p.).

Price Perkins was living in the Rockfield Precinct (which is probably the same as the first district) at the time of the 1880 census. Perkins, who listed his occupation as farmer, was 70 years old. Living in the same residence was his wife, 60 year old Elizabeth who is listed as keeping house. Daughter Lillie at 32 years of age (she should be 22 according to the 1860 census) and 25 year old son William were living in the home at the time. William does not appear on the 1860 census. William lists his occupation as "works on farm" (MyFamily.com 1880 census).

The Perkins family Bible included in Sharp's report states that "J. P. Perkins died November the 8, 1889." It is unclear if this is Joseph Price Perkins or a later descendent (Sharp 2006:n.p.). A number of persons with the surname Perkins are listed in the Stallard Springs District of Warren County in the 1900 census. A portion of the Rockfield Precinct may have been renamed for the 1900 census. Joseph Price Perkins was not located during a search of the census. It is surmised Joseph Price Perkins died before 1900. His 52 year old son, Oscar Perkins, is listed in the 1900 census as head of household. Oscar Perkins lists his occupation as farmer. Living with Oscar is his mother, 80 year old Elizabeth Perkins (MyFamily.com 1900 census). Joseph Price Perkins, Elizabeth Perkins, and at least two of their children and other persons are interred in a former church cemetery on Cook's Farm on US 68 (WCGS and SKGS 1991:180). The current owners of the property (Site 3) refer to the portion with the cemetery as Cook's Farm.

In a deed dated November 11, 1905, John L. McGinnis purchased lot number 3 containing 148 acres from Geo. H. Galloway, Commissioner of the Warren Circuit Court. This Master Commissioner's Deed is referenced in the case of Benjamin Perkins, et al as plaintiffs against Oscar Perkins, et al. as defendants. Geo. H. Galloway, as commissioner, acted for the 39 parties of the first part of the deed. The grantors may be the heirs of Joseph Price Perkins and the sale of the property served to settle his estate. Surnames of the grantors include Perkins, Sandidge, Read, Hall, Conley, Sampson, Curran, Stahl, Jamison, Arnold, and Royster. Lot 3 was originally bid in by Oscar Perkins for $1,000 but his bid was transferred to Jno. M. Stahl. Stahl transferred his bid to John L. McGinnis. The deed states that Lot 3 is a division of the lands of Price Perkins, deceased, near the White Stone Quarry. The deed continues with a legal description of "the Price Perkins homestead." Reservations for passage over Lot 3 are included in the deed. One reservation was for use of an old existing road to a tenant house on Oscar Perkins property. "There is also reserved a roadway which runs from the dwelling house on lot No. 3 south to a gate" then southeasterly to a gate on the east side of Lot 3. This roadway was reserved for Lillie E. Royster. Other rights of passage over the land for Oscar Perkins are included in the deed (Warren County Deed Books [WCDB] 99:515).

An oil map of southwest Warren County dated 1920 shows land owners in the proposed project area (Figure 86). The Louisville and Nashville Railroad, Memphis Junction, the White Stone Quarry railroad spur, Blue Level Road (which is not identified), and the Russellville Pike are illustrated on the map. The property boundary of White Stone Quarry is illustrated on the map, northeast of Blue Level Road. The McGinnis property is located north of Russellville Pike and southwest of Blue Level Road. The John L. McGinnis property appears to be identified as the "Tom McGinnis" property, although it is unclear why it is listed as such. According to an affidavit, John L. McGinnis died in 1921 after the publication of the map (Great Arch Oil Company 1920; WCDB 313:151).

A deed dated January 22, 1927 has Hubert McGinnis and his wife Marion McGinnis, Shirley McGinnis and his wife Marie McGinnis, and Mattie Capshaw and her husband L. H. Capshaw as heirs of John L. McGinnis selling a three-quarter interest in 77.5 acres (although it appears as 7.5 in the deed) to Willie McGinnis (aka William McGinnis). The purchase price was $400. William McGinnis had already received a one-quarter interest in the property as inheritance from John L. McGinnis. This 77.5 acres was a portion of the land conveyed to J. L. McGinnis on November 11, 1905 by Benjamin Perkins et al. J. L. McGinnis died as the owner of the property leaving his widow Mary E. McGinnis and four children (WCDB 160:155 and 313:152).

An affidavit for the heirs of J. L. McGinnis was filed by William McGinnis on January 23, 1960. William McGinnis states he is 60 years old and has resided in Warren County his entire life. According to the affidavit, J. L. McGinnis died intestate on December 8, 1921 a resident of Warren County. At the time of his death his heirs included: Mary E. McGinnis, J. L. McGinnis' widow (and deceased by the time of the affidavit); a son, Hubert McGinnis (deceased at the time of the affidavit) and his wife Marian McGinnis; a son, Shirley McGinnis and wife Marie McGinnis who resided in Warren County; a daughter Mattie Capshaw and husband L. H. Capshaw who resided in Indianapolis, Indiana; and son William McGinnis, who was unmarried until 1951. Each of the heirs was over 21 years of age on January 22, 1927, when a deed from the heirs of J. L. McGinnis conveyed inherited land to William McGinnis (WCDB 313:151).

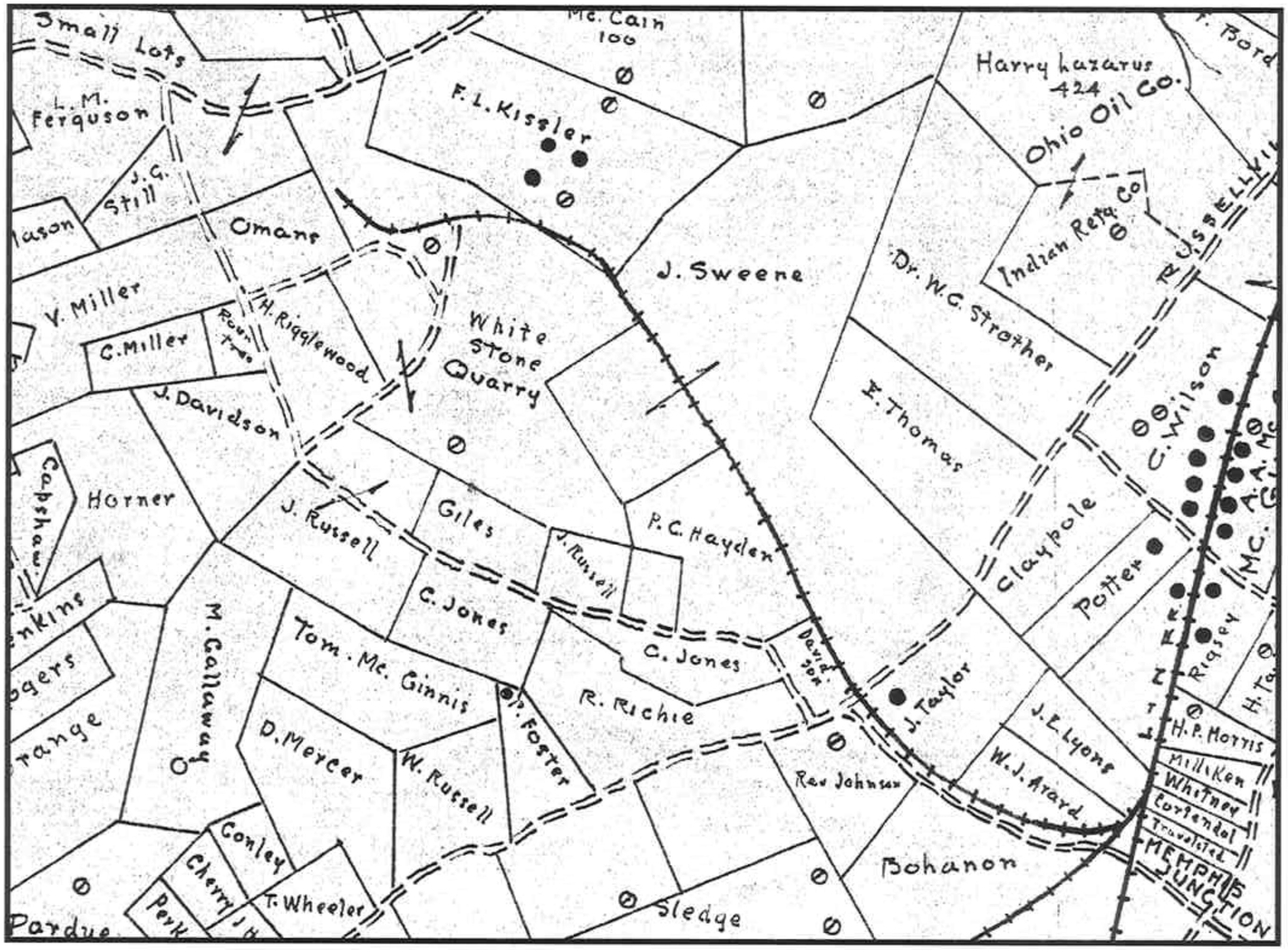

Figure 86. Site 3, 1920 Oil Map of South West Warren County, KY by Great Arch Oil Company.

William McGinnis and wife Marles McGinnis conveyed a one-half interest to Irvin Jaggers and wife Virginia Jaggers and a one-half interest to Dean Jaggers and wife Hazel Jaggers in 442.3 acres in Warren County. The deed is dated January 23, 1960. The consideration was $1, other consideration, and a promissory note in the amount of $25,000 to William McGinnis. William McGinnis continued to reside on 70 acres adjoining or near the property conveyed in this deed. McGinnis reserved the right to use a spring on the property. The 442.3 acres tract transferred in this transaction consisted of five tracts previously purchased by William McGinnis, although the tracts do not total 442.3 acres as specified in the deed. Of the total acreage, 77.5 acres consists of a tract William McGinnis purchased a three-quarters interest in from the heirs of J. L. McGinnis on January 22, 1927. William McGinnis previously owned a one-quarter interest in the property as inheritance from J. L. McGinnis (WCDB 313:152).

In a deed dated October 25, 1962, Irvin Jaggers and wife Virginia Jaggers and Dean Jaggers and wife Hazel Jaggers sold 256.94 acres to Mitchell Leichhardt and J. Lewie Harman, Jr. The consideration for the transfer was $1 and other consideration. The grantors retained the rights to the 1962 tobacco crop. The deed states that this parcel is a portion of the same property purchased by the grantors from William McGinnis and wife Marles McGinnis in January 1960 (WCDB 334:499).

Mitchell Leichhardt, single, sold an undivided one-half interest in 256.94 acres in a deed dated July 23, 1968. The purchaser of the property was James R. Thompson. The consideration for the transaction was $17,000 paid in cash and the assumption of one-half of a mortgage in the original amount of $20,000 and dated October 25, 1962. Leichhardt retained a one-half interest in the 1968 tobacco crop raised on the property (WCDB 380:188).

On May 23, 1972, J. Lewis Harmon, single, conveyed an undivided one-half interest in 256.94 acres to John C. Perkins and wife Emily Perkins of Bowling Green. Consideration for the conveyance was $25,000 of which $15,000 was paid in cash. The remainder was included in the assumption in one-half of a mortgage in the original amount of $20,000 (WCDB 412:234).

John C. Perkins and wife Emily H. Perkins transferred a one-half interest in 256.94 acres to Hoy Hodges, Trustee on December 20, 1974. Consideration for the transfer was $1 and other consideration. The deed description remains the same as that of the October 25, 1962 deed (WCDB 334:499). The land is described as being located near the White Stone Quarry and Russellville Road and south of Blue Level Road. Surnames of adjacent property owners at the time of the survey and resulting description by C. F. Gilliam include: Shirley McGinnis, the two Jaggers couples, Cox, Baskerville, Ritchie, and Burk. Access to the property "is reached from what is known as the Blue Level Road by a roadway extending southwardly alongside a tract formerly owned by" the Jaggers of approximately 170 acres. An interest in the roadway is conveyed in the deed. The deed was subject to the Jaggers reserving a one-half interest in the oil rights. Also the Southern Cut Stone Company retains the oil and gas rights and right-of-way to a 2.2 acre tract purchased by William McGinnis from the company in May 1944 (WCDB 436:346).

Hoy Hodges, acting as Trustee, conveyed to John C. Perkins and Emily H. Perkins each an undivided one-half interest in 256.94 acres in a deed dated December 20, 1974. The consideration expressed in the deed for the transaction was $1 and other consideration (WCDB 436:349). This and the prior transaction appear to be an effort to ensure John C. Perkins and Emily H. Perkins each have an undivided one-half interest in the property.

On January 27, 2006, John C. Perkins and wife Emily H. Perkins transferred an undivided one-half interest in 256.94 acres to the Perkins Family LLC. There was no consideration for the transfer (WCDB 920:842).

NRHP Evaluation: Not Eligible. The main dwelling found on this site (Resource A) has diminished integrity due to sizeable additions constructed in the 1960s. These additions include the two wings, the two-story flat-roof addition to the rear elevation, and the large, unsympathetic one-story rear additions. The only elevation that continues to convey the dwelling's original scale, massing, and design is the façade, which has itself been altered by the addition of two one- or one-and-one-half-story wings to either side. These side wings in conjunction with the rear additions add significant square footage that may exceed that of the original structure. The percentage of modern versus historic is nearly even. As a result, these non-historic additions diminish the historic qualities of design, materials, workmanship, and feeling necessary for the residence to convey its significance. Therefore the main residence does not appear to be individually eligible for the NRHP under Criterion C. The diminished architectural integrity of the house lessens its ability to convey significance under Criterion A or B. As a result, the main house and associated outbuildings do not appear to be eligible under Criterion A, B, or C.

In addition, the majority of structures located on the property do not appear to date to the construction period of the main residence. The only two structures that may date to the original owner of the main residence, Joseph Price Perkins, are the log barn (Resource C) and possibly the secondary residence (Resource H) to the northwest of the main residence. The cemetery (Resource T) also appears to date to the ownership of Joseph Price Perkins, as Sharp states Perkins and his family are interred in the cemetery (Sharp 2006:n.p.). Both the log barn and secondary residence have diminished integrity because of additions and alterations. The log barn is not an outstanding example of log construction for an agricultural outbuilding. The façade of the barn has been altered by the addition of an opening above the pedestrian entry. The secondary residence has an enclosed porch, large façade addition, and is clad in aluminum siding. The secondary residence no longer retains the historic qualities of design, materials, workmanship, and feeling necessary to convey its significance. The cemetery does not appear to be eligible for individual listing in the NRHP. In addition to meeting Criterion Consideration D, cemeteries (like any site) must retain their integrity of location, design, setting, materials, workmanship, feeling, and association to be eligible under Criterion A, B, or C. The legible burials in this cemetery range from the late nineteenth century to the early twentieth century. Although the burials are historic, the overgrown vegetation and poor condition of the cemetery compromise the historic design, materials, setting, and feeling of the cemetery. Therefore, the cemetery does not retain the integrity necessary to convey its significance as a historic cemetery. The loss of integrity precludes the cemetery from eligibility under Criterion A, B, or C. The existing springhouse may date to the late nineteenth or early twentieth century. The construction method of the springhouse is not outstanding for an agricultural or domestic outbuilding. The springhouse is constructed of rubble stone similar to twentieth century residences in the area. The modern alteration of the raised roof and entry diminishes the historic qualities of design, materials, workmanship, and feeling necessary for the springhouse to convey its individual significance. The two residences located off US 68 (Resources O and P) do not appear to embody the distinctive characteristics of a style, method, or period of construction. Therefore, the two residences located off US 68 appear not to be eligible for listing in the NRHP under Criterion C for architectural significance. The majority of the agricultural outbuildings located on the property are common to the area. This precludes them from eligibility for listing in the NRHP under Criterion C for architectural significance.

In order to more fully evaluate larger cultural resources such as agricultural properties, the National Register has established a series of landscape characteristics considered to be tangible evidence of the activities and habits of people who occupied, developed, used, and shaped the land. The National Register Bulletin Guidelines for Evaluating and Documenting Rural Historic Landscapes addresses eleven discrete areas grouped into two broad categories:

Processes (actions instrumental in shaping the land, such as responses to fertile soils):

1) land uses and activities
2) patterns of spatial organization—features such as land use and field patterns as well as relationships between major physical components such as dwellings and agricultural outbuildings
3) responses to the natural environment—siting buildings to take advantage of lakes, rivers, or grasslands
4) cultural traditions—social, ethnic, or religious traditions, as well as skills and trades of occupants

Components (physical evidence on the land, such as buildings, orchards, and pastures):

5) circulation networks—systems of movement, both internal and external
6) boundary demarcations
7) vegetation related to land use—including agricultural, ornamental, and incidental vegetation
8) buildings, structures, and objects
9) clusters—groupings of buildings
10) archaeological sites
11) small-scale elements such as gateposts (McClelland, et al 1999:3-6).

The Keystone Farm retains a number of these landscape characteristics, including: 1) Land uses and activities are exhibited in the placement of the existing outbuildings and the relatively level agricultural fields. The historic agricultural land patterns are somewhat diminished since the majority of cleared fields are utilized for livestock grazing rather than crops. Land uses are also evident in the stone quarries and the cemetery located on the property. 2) Patterns of spatial organization are evident in the siting of the main residence and agricultural outbuildings, which is also a 3) response to the natural environment. Most of the structures on the property are located near the edge of the surrounding hills to maximize use of the level terrain. 5) Circulation patterns are present in the drive leading from L. C. Carr Road through the open fields to the main and secondary residences. Other circulation patterns include the former road leading to the large quarry, the apparent remains of a former lane along a fence row in front of the livestock barn off US 68 (Resource N), and the lane leading to the non-extant house foundation (Resource L) and two houses with stone exteriors (Resources O and P). Other lanes illustrated on the historic maps are not apparent on recent aerial photographs. 6) Boundary demarcations such as tree lines and fence rows are visible on recent aerial photographs. These demarcations relate to field patterns and possible ownership boundaries. The dense vegetation obscures any boundary demarcations that may be located along the hillsides. 8) and 9) Buildings on the property are grouped into domestic and agricultural clusters with barns located at a distance from the domestic yards of the residential clusters. No historic domestic outbuildings remain that were associated with the main residence. The springhouse (Resource G) is some distance from the main residence. Only a small outbuilding in ruinous condition is associated with the secondary residence. The only domestic outbuilding related to the residences off US 68 is the remains of the stone garage. The agricultural outbuildings near the main residence include the springhouse, the small barn (Resource B), and the encased log barn (Resource C). It is unclear if the tobacco barn (Resource D) and two concrete block structures (Resources E and F) that appear to be pump houses for wells are historic. Agricultural resources located off US 68 include the two livestock barns (Resources M and Q). Small-scale elements include the ponds and fence rows associated with the agricultural use of the property. Although it is a small-scale element, the entrance gate to Keystone Farm does not appear to be over 50 years of age.

While the property exhibits many of the landscape characteristics required for consideration as a rural historic landscape, it still must meet at least one of the NRHP criteria for listing and maintain integrity. The NRHP, which is maintained by the National Park Service, provides specific criteria (Criteria A through D) for evaluating the significance of properties over fifty years of age.

National Register Criterion A relates to significant associations with events that have contributed to the broad patterns of our history. National Register Criterion B considers associations that exist with the lives of significant persons from our past. Criterion C relates to the significant outward expression of a property such as its type, period, or method of construction. This might also be applicable if the site represents the work of a master, if it possesses high artistic values, or if it represents a significant and distinguishable entity whose components may lack individual distinction. Criterion D, which is usually reserved for archaeological resources, applies when valuable and important information from history or pre-history is present.

Although this site retains a number of landscape characteristics used in evaluating NRHP eligibility, the site does not appear to be an outstanding example of a rural historic landscape in Warren County. The majority of the landscape characteristics this site retains are commonly found in rural areas of south-central Kentucky, such as pastures and fence rows for livestock, tree lines and fence rows visibly exhibiting boundary demarcations, and the siting of residences and agricultural structures to maximize use of the more valuable level terrain and accessing fields. The lack of domestic outbuildings, some missing circulation patterns, and the diminished integrity of the remaining residences and agricultural outbuildings are all contributing factors in the evaluation of this site as a rural historic landscape. The boundaries of the property under Joseph Price Perkins who constructed the main residence are unclear from present research. It is apparent that the boundaries associated with the house have been reduced and enlarged over time with the various ownership of the property. The changes in ownership have no doubt changed the agricultural practices and field patterns over time. Therefore this site does not appear to meet the standards required for significance under Criterion A.

While connections were found through deed research between the property and persons/families of local prominence, the level of significance and the associations required do not appear sufficient for National Register eligibility under Criterion B. The property as it exists today does not date to the Perkins Family tenure, although the exact boundary during their tenure is unclear. As a mid- to late nineteenth century farmstead, it was most likely constructed by the Perkins family. While the Perkins appear to have been a prosperous local family, significance within the context of Bowling Green or Warren County history has not been established. Furthermore, extensive modifications have been made to the main dwelling. The current identity of the property does not adequately reflect their tenure.

The National Register also maintains guidance regarding the evaluation of historic integrity. The seven aspects include location, design, materials, workmanship, feeling, and association. While elements of location, setting, feeling and association are present, the property has diminished integrity of design, materials, feeling, and workmanship. The main residence has been altered and the agricultural outbuildings are common examples found in the local area. The outbuildings are also not architecturally outstanding examples of agricultural outbuildings.

The large quarry, which is surmised to be the Keystone Quarry, may be eligible as a historical industrial archaeological resource under Criterion D. No standing structures are associated with the quarry. An archaeological investigation of the quarry may be able to provide information on quarrying methods and a context for Warren County stone quarries.

Site 4

KHC Survey #: WA-132

Photographs: Figures 87-106

Map: Figure 2

Zone: 16

Quad: Rockfield, KY 1973 (Photo Inspected 1979)

UTMs: E: 541975, N: 4088225

Description: This is a two-story, three-bay (d/w/w), side-gable, frame side-passage house historically known as the Gladdish-Asher House (Figure 87). The house, oriented to the northwest, is located at 6309 Russellville Road (US 68). The single-leaf entry is the left bay along the façade. The entry surround has Greek Revival characteristics, with three-light side-lights, a four-light transom, pilasters, and dentil molding above the door and along the frieze (Figure 88). Windows throughout the house have six-over-six double-hung sashes. The southwest elevation has a wide brick chimney flush with the wall plane centered with the gable (Figure 89). A two-story, gable-roof ell extends from the rear of the house forming a continuous wall plane along the southwest elevation. Centered along the rear elevation of the ell is an exterior brick chimney (Figure 90). A two-story addition with a flat- or shallow shed-roof fills the area to the rear formed by the perpendicular intersection of the main section and the rear ell. The wall planes are flush with the gable ends of the rear ell and the northeast elevation. This historic addition, at which time the decorative brackets may have been added to the house, has a single-leaf entry with a three-light transom. A one-story historic addition with an asymmetrical gable-roof is found along the rear elevation of the ell and two-story addition. The northeast elevation of this rear addition has a porch supported by decorative metal posts resting on a poured concrete deck. This porch shelters a single-leaf entry with a multi-light door and a ribbon of three windows. The windows of the one-story addition have six-over-six double-hung sashes. Projecting from the rear elevation of the one-story addition is an enclosed gable-roof portion with a single-leaf entry. This may be an exterior cellar entrance. A wide frieze with decorative paired sawn brackets is found on the façade, northeast, and southwest elevations. The southwest and northeast gables have cornice returns. The roof of the house is sheathed in asphalt shingles. The house is clad in weatherboard siding. A brick foundation is visible along the façade. The remainder of the foundation could not be determined as portions of the foundation are concealed by metal skirts. This site was previously surveyed in 1978 and 1997 (KHC Survey and National Register files).

Figure 87. Site 4, Two-story, three-bay, side-gable, frame side-passage house (WA-132).

Figure 88. Site 4, Detail of entry.

Figure 89. Site 4, Façade and southwest elevations of the house.

Figure 90. Site 4, Northeast and rear elevations of the house.

Six outbuildings, former wells, and a historic fence are associated with this site. The historic stone fence extends the width of the domestic yard between the house and Russellville Road (US 68) (Figure 91). The cut stone is laid with large stones along the ground, a narrower cap stone, and filled with a honeycomb pattern between. End posts and gate posts for the drive entry are constructed of stone, as are the pedestrian entry posts. Two stone hitching posts are found along the front of the fence (Figure 92).

Also in the domestic yard are what appear to be two former wells. The first is a square, poured concrete foundation that continues below grade. The second appears to be the location of a manual pump that is no longer extant (Figure 93). This feature has two rows of cut stone resting on grade.

A two-bay, front-gable frame garage is located to the southeast of the house (Figure 94). The garage has exposed rafter tails and is clad in vinyl siding. The roof of the garage is sheathed in asphalt shingles.

The remains of two log buildings are found to the rear of the house. The first log structure has collapsed with the roof resting on a few remaining logs (Figure 95). This log structure looks much as it did when surveyed in 1997 (KHC Survey and National Register files). The gable-roof, partially sheathed in prefabricated metal panels and with exposed rafter tails, has its gable clad in board-and-batten siding. The construction method appears to be v-notching. The rear elevation (southeast) has the remains of a chimney (Figure 96). The bottom portion of the chimney is constructed of stone while the remains of the upper portion are constructed of brick.

The second log structure is located to the southwest of the previous log structure. This log structure has v-notch construction and an entry on its northwest elevation (Figure 97). The entry has a door constructed of vertical boards. Some stone and wood chinking exists, but the wood chinking may not be historic. The roof has collapsed (Figure 98). The structure rests on a stone pier foundation although stones are found along the ground under the sill. When surveyed in 1997 this log structure retained its roof, and the gable was clad in weatherboard siding (KHC Survey and National Register files).

Figure 91. Site 4, Historic stone fence along front of domestic yard looking southwest.

Figure 92. Site 4, Detail of stone fence with hitching posts.

Figure 93. Site 4, Possible location of manual well pump.

Figure 94. Site 4, Two-bay, front-gable, frame garage looking to the south.

Figure 95. Site 4, Collapsed log structure with roof resting on remains of logs.

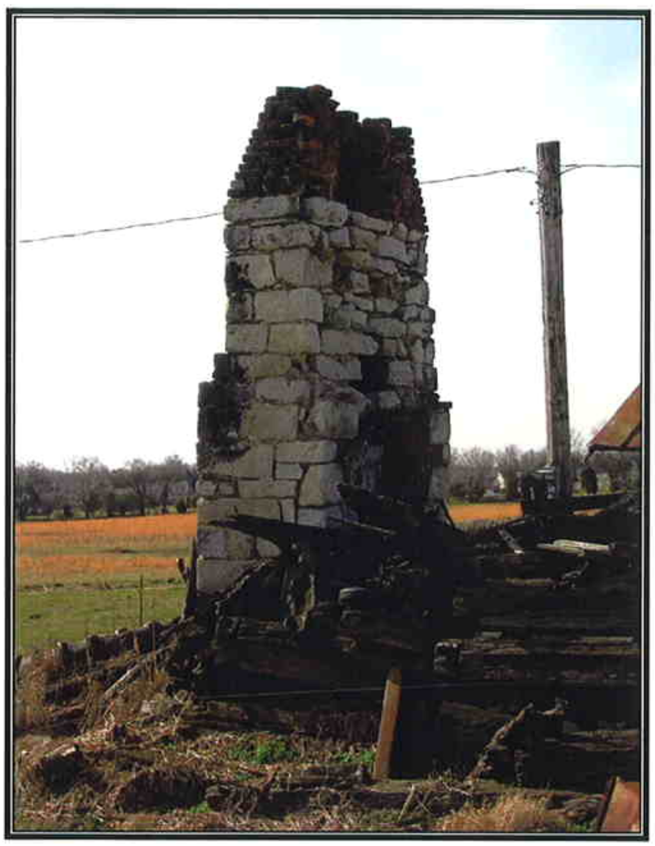

Figure 96. Site 4, Stone and brick chimney associated with collapsed log structure.

Figure 97. Site 4, Remains of second log structure looking to the southeast.

Figure 98. Site 4, Remains of second log structure looking to the southwest.

To the rear of the domestic complex is a concrete block well house with a frame roof covering (Figure 99). The roof is sheathed in prefabricated metal panels.

To the rear (southeast) of the domestic complex is a lane leading to two barns (Figure 100). The barn to the southwest appears to be a front-gable livestock barn with an enclosed hay hood (Figure 101). The roof of the barn is sheathed in prefabricated metal panels. The barn is clad in vertical boards. The second barn (to the northeast) may also be a livestock barn with possible shed-roof additions (Figure 102). The roof of the barn is sheathed in prefabricated metal panels. The barn is clad in vertical boards. The outbuildings outside the domestic complex do not appear to be individually significant.

NRHP Evaluation: Eligible. According to the files of the KHC, this site was previously determined eligible for listing in the NRHP by agreement. The agreed upon boundaries and date of determination were not given (KHC Survey and National Register files). One source states the two log structures were connected in a dog-trot form and served as the original residence for the Gladdish family. A second source states that one log structure served as a residence and the second served as a farm building. Richard R. Gladdish owned the property at the time. Sumpter states the Gladdish family cemetery was located to the left of the drive, although Richard R. Gladdish's headstone was the only one visible in the mid-1970s. No headstones were identified during the current survey. A number of Gladdish brothers owned property in the area. After Richard R. Gladdish's death in 1833, his widow Mary A. Gladdish sold the farm to Charles Asher in 1844. Asher constructed the current residence and moved the log structures to the rear of the house. Yeager states Asher constructed the current side-passage house in 1875. Yeager includes a photograph of both log structures.

Figure 99. Site 4, Concrete block well pump house looking west.

Figure 100. Site 4, Lane leading to two barns looking southeast.

Figure 101. Site 4, Southwest barn looking to the southeast.

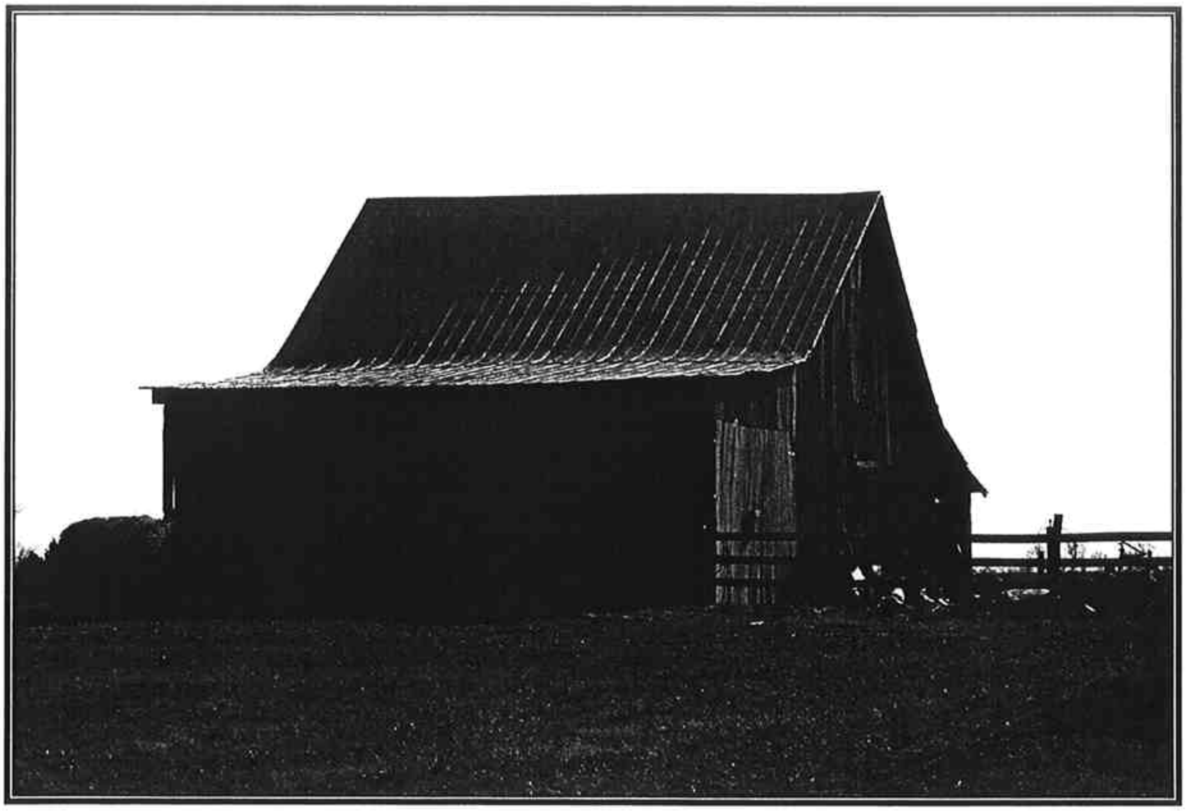

Figure 102. Site 4, Barn to the northeast of previous barn looking southeast.

The log structure to the west had a shed-roof addition along the east elevation. The house was owned for much of the twentieth century by Tim Wheeler and his wife (Sumpter 1991:70; Yeager 1977:7-8). This site was reevaluated under Criteria A, B, and C and found eligible under Criteria C as an excellent example of a side-passage house with Greek Revival characteristics in rural Warren County. The house retains much of its original materials and form. Original or historic materials include the cladding, Greek Revival entry, freize boards, decorative brackets, and brick chimney. The additions appear to be historic and do not detract from the original materials and stylistic characteristics of the house. The house retains the historic qualities of location, design, materials, workmanship, and feeling necessary to convey its significance. Thus, this site appears eligible for listing in the NRHP as an excellent example of a side-passage house with Greek Revival characteristics in rural Warren County.

The proposed NRHP for the site would include the domestic yard, including the stone fence to the front (contributing), the garage (non-contributing), the two features (possible two wells, one contributing and one non-contributing), a portion of the drive, and the two collapsing log structures (contributing). The boundary would follow the US 68 right-of-way to the northwest, a board fence to the southwest and northeast, and continue along a partial fence to the immediate rear of the collapsing log structures (Figure 103).

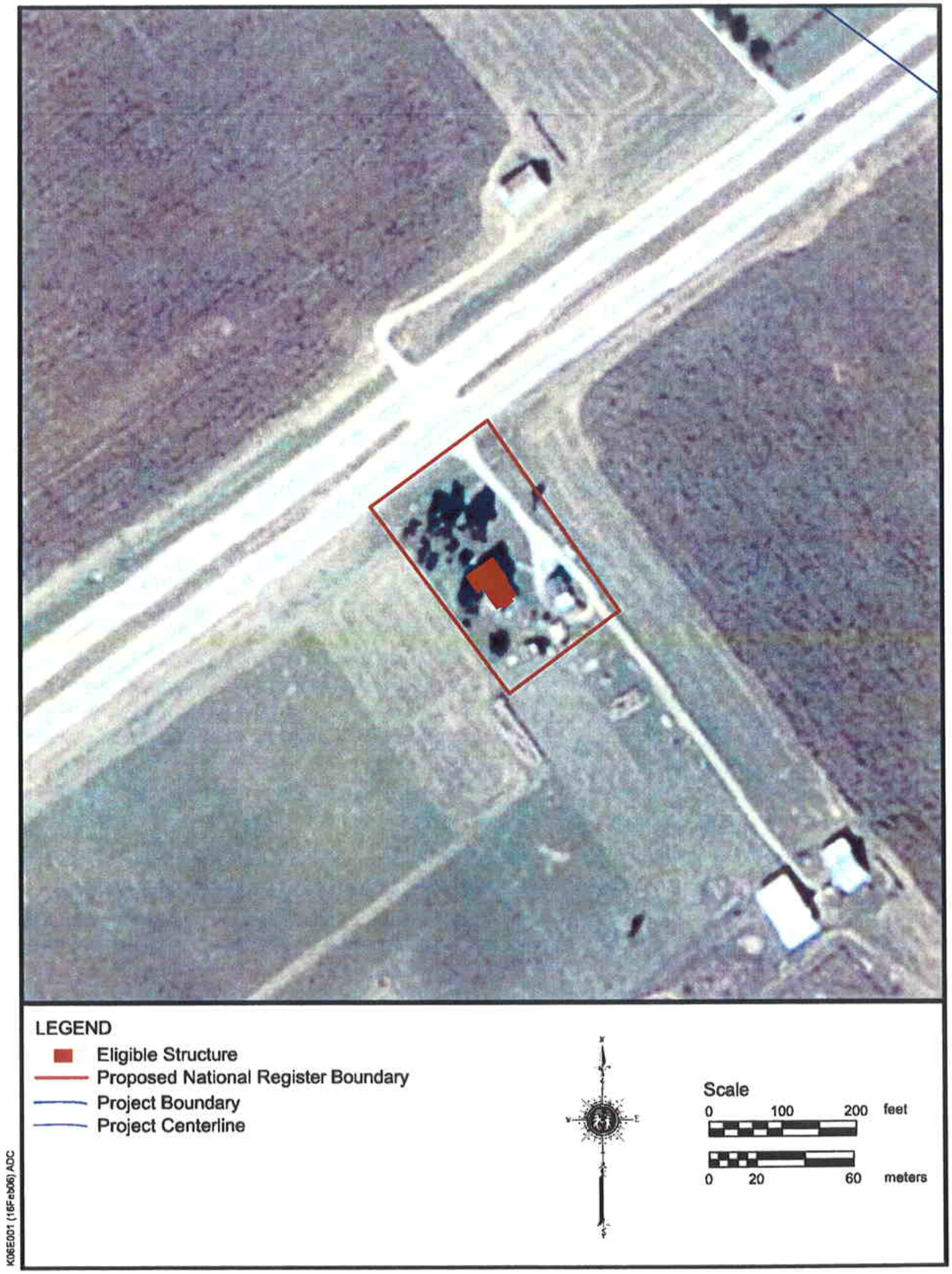

Figure 103. Site 4, Proposed National Register Boundary.

Site 5

KHC Survey #: WA-131

Photographs: Figures 104-106

Map: Figure 2

Zone: 16

Quad: Rockfield, KY 1973 (Photo Inspected 1979)

UTMs: E: 542314, N: 4087404

Description: This is a two-story, five-bay (w/w/d/w/w), side-gable house with alterations (Figure 104). The house, located at 766 West McLelland Road, is oriented to the southwest. The centered single-leaf entry has a modern door surround with pilasters and a pediment. The windows throughout the house have replacement six-over-six double-hung sashes. The northwest elevation has an exterior brick chimney with shoulders centered along the gable end (Figure 105). A one-story, gable-roof rear ell forms a continuous wall plane with the northwest elevation of the main block of the house. The northwest elevation of the rear ell has a non-historic three-sided projecting bay window. The bay window has non-historic six-over-six double-hung sashes. Perpendicular to the northwest elevation of the rear ell is a gable-roof addition. The southwest elevation of this addition has a single-leaf entry with a non-historic door and paired windows to the left of the entry. A ribbon of three windows with non-historic six-over-six double-hung sashes is found on the northwest elevation of this addition. Another gable-roof addition is located along the rear elevation of the rear ell. The roof is sheathed in asphalt shingles. The house is clad in vinyl siding. Although some stone is visible, the majority of the house appears to rest on a poured concrete foundation. The house may appear on the 1877 atlas of Warren County as the residence of W. H. Jones (Figure 19). This house was previously surveyed in 1978 as a one-and-one-half-story, five-bay log house. The survey form states the house is an enclosed dog-trot form that was clad in weatherboard siding. The house had two exterior gable end chimneys. Photographs of the house on the previous survey form indicate small, square windows were found to either side of the chimneys in the upper story. Small, rectangular windows appear to be visible in the photographs for the upper floor just below the roofline along the façade (KHC Survey and National Register files). This house appears to be the same as indicated in the previous survey form, although alterations have been made to the house. The roof appears to have been raised to accommodate a full second story. One of the brick gable end chimneys has been removed. The façade fenestration appears different than in the photographs of the previous survey form, as the window spacing is currently more uniform and full size windows have been added to the second story. The small upper story windows to either side of the chimneys have been filled in or enlarged to accommodate full size window sashes.

Northwest of the house is a front-gable barn with three entries along its southeast elevation: two double-leaf entries and a single-leaf pedestrian entry (Figure 106). The entries are constructed of vertical boards. The southwest elevation of the barn has a shed-roof addition, probably historic, that forms a continuous roof line with the original portion of the barn. This addition has four windows along the southwest elevation with six-light sashes. The southwest elevation rests on a poured concrete foundation. The roof is sheathed in prefabricated metal panels. The barn is clad in rolled asphalt with a brick pattern over vertical boards. This barn appears on the 1952 topographic map (Figure 25).

NRHP Evaluation: Not Eligible. Modifications to this house have compromised the historic qualities of design, materials, workmanship, and feeling necessary to convey its significance. Modifications to the house include raising the upper half-story to a full second story, replacement windows, vinyl siding, removal of one of the gable end chimneys, replacement doors, non-historic door surround, and rear additions.

Figure 104. Site 5, Two-story, five-bay, side-gable house with alterations (WA-131).

Figure 105. Site 5, Northwest elevation of the house.

Figure 106. Site 5, View to the north of barn associated with the house.

Research did not yield any information associating the site with a significant person or event in history. As a result, this site does not appear to be eligible for inclusion in the NRHP under Criterion A, B, or C.

CONCLUSION

During January and February 2006, Cultural Resource Analysts, Inc. (CRAI), completed a cultural historic reconnaissance survey of the project area and reevaluation of previously identified sites for the proposed East Kentucky Power Cooperative (EKPC) GM to Memphis Junction transmission line project southwest of Bowling Green, Warren County, Kentucky.

After consultation with the KHC, it was determined that a cultural historic reconnaissance survey of the project area and reevaluation of previously identified sites in the area of potential effect (APE) would be sufficient for the proposed project. During consultation, the KHC determined that five previously surveyed sites (Sites 1-5) were located near the proposed transmission line project. They were the focus of this letter report. These five previously surveyed sites are: WA-318, WA-325, WA-135, WA-132, and WA-131 (Sites 1-5). Prior to initiating fieldwork, a search of records maintained by the KHC was conducted to determine if other previously recorded cultural historic sites located in the APE. This inquiry indicated that no other sites were located within the APE had been previously documented. One of these sites has been previously determined eligible by agreement for listing in the National Register of Historic Places (NRHP) (WA-132). The NRHP boundaries and date of determination could not be ascertained. None of the other previously surveyed sites appear eligible for listing in the NRHP.

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APPENDIX A. DETERMINATIONS OF EFFECT

Determinations of Effect for the Proposed GM to Memphis Junction Transmission Line Project in Warren County, Kentucky

Site 1

KHC Survey #: WA-318

Determination of Effect: N/A

Site 2

KHC Survey #: WA-325

Determination of Effect: N/A

Site 3

KHC Survey #: WA-135

Determination of Effect: N/A

Site 4

KHC Survey #: WA-132

Determination of Effect: No Adverse Effect. This site lies approximately 900 ft to the southwest of the proposed transmission line and is within the site's viewshed (Figures A-1-A-3). As such, the new transmission line will introduce a new vertical and horizontal element to the agricultural landscape that will be visible from the front, side, and rear yards, resulting in an effect to an eligible historic resource. Determinations of adverse effect, however, must consider other factors rather than rely solely on the effected property lying within the viewshed. In this example, directly to the front of the house is US 68 which has been widened to four lanes in the recent past. A communications tower associated with a Tennessee Valley Authority Customer Service building is visible in the distance, past the location of the proposed transmission line. The existing visual intrusions within the house's viewshed must be taken into consideration. A final consideration is the area of significance for which the property is determined potentially eligible. Architectural significance is rarely diminished by influences that do not alter or remove the materials manifesting the characteristics or methods the structure represents. As an example of a housing form and style, the addition of a transmission line within the current viewshed will not adversely affect those qualities for which the dwelling achieves significance. The combination of area of significance and current visual intrusions results in a determination of No Historic Resources Adversely Effected.

Site 5

KHC Survey #: WA-131

Determination of Effect: N/A

Figure A-1. Site 4, View to the northeast near driveway of residence.

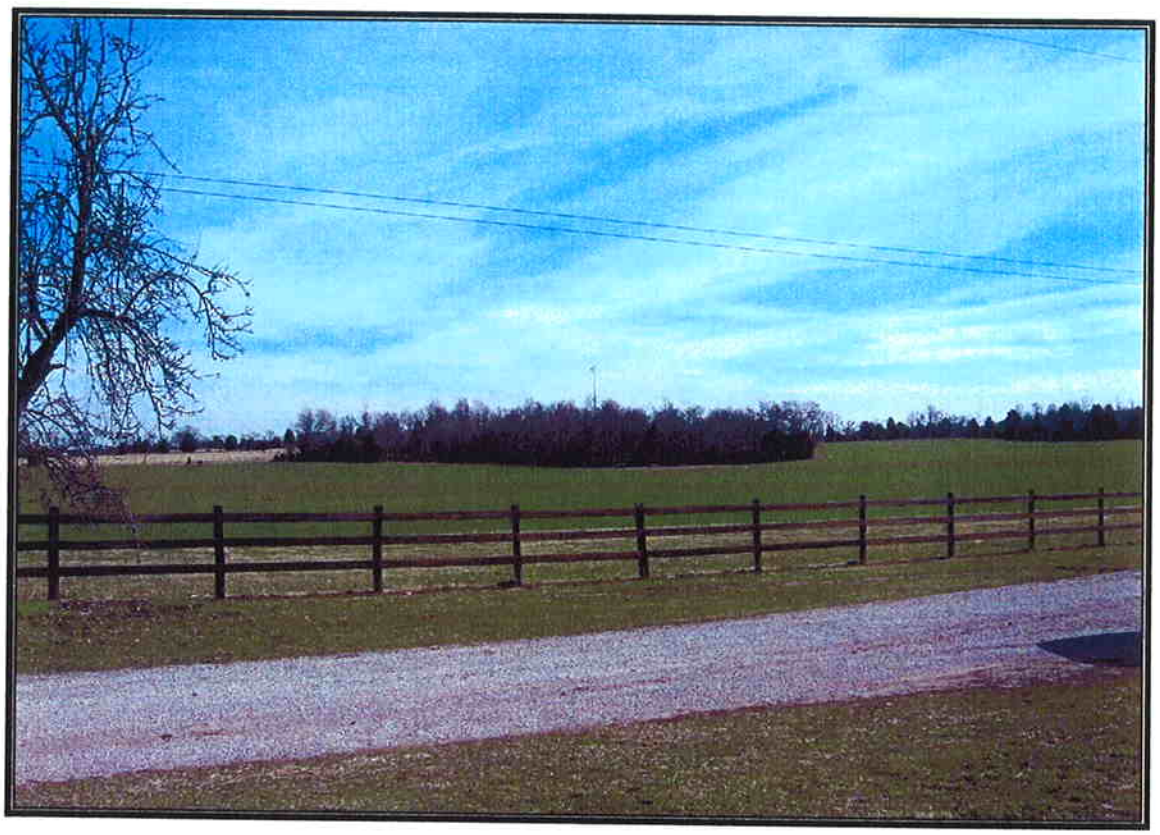


Figure A-2. Site 4, View to the northeast of adjacent field and TVA communications tower.


Figure A-3. Site 4, View to the southeast with lane to barns and adjacent field.

APPENDIX G
SUMMARY OF JUSTIFICATION OF THE PROPOSED PROJECTS

EAST KENTUCKY POWER COOPERATIVE

Summary Of Justification Of The Proposed Projects Related to Providing A Connection To Warren RECC

Overview

On May 11, 2004, the East Kentucky Power Cooperative, Inc. ("EKPC") Board of Directors approved a resolution accepting an application from Warren RECC (WRECC) for membership with EKPC. WRECC currently is not connected to the EKPC power grid and EKPC initially investigated the possibility of wheeling of electric power from EKPC to WRECC through Tennessee Valley Authority's (TVA) system. This means that TVA would transfer electric power through its system from EKPC to WRECC for a fee. However, TVA would not agree to provide such a service and has taken the position that it will not provide transmission wheeling to their former electric power distributor WRECC. Therefore, EKPC determined that it must construct transmission lines that would tie WRECC into its system and transport electric power to WRECC's system.

A study was subsequently conducted to determine the transmission facilities that would be needed to reliably provide electric service to WRECC beginning in 2008. The design objective of this transmission study for service to WRECC was to develop an electric transmission system that would satisfy the following requirements:

- Provide a direct connection from the EKPC system to the Warren RECC system with sufficient capacity between the two systems to allow EKPC to contractually deliver the required power to meet Warren's peak demand.
- Connect all of Warren RECC's existing 161 kV delivery points (East Bowling Green/General Motors (GM), Memphis Junction, and Aberdeen)
  - It is important to note that transmission connections for the delivery of bulk power to WRECC are best made at the existing delivery points. Otherwise, extensive modifications and additions to the WRECC system would be required in addition to significantly more new paths for transmission.
- Connect the new Warren RECC 161 kV delivery point at Magna to the existing 161 kV delivery points.
- Provide an adequate and reliable transmission system that does not result in system problems for either EKPC or neighboring transmission systems for normal and/or single-contingency conditions.

EKPC investigated a number of electrical alternatives to the proposed project. The first alternative investigated was an extension at 69 kV from the Barren County Substation, EKPC's western most substation, closest to WRECC's system. However, this alternative was determined not to be feasible, because a 69kV system could not adequately (insufficient capacity) and economically serve WRECC's electrical demand, which is estimated to be approximately 400 megawatts in 2008.

4775 Lexington Road 40391
P.O. Box 707, Winchester,
Kentucky 40392-0707

Tel. (859) 744-4812
Fax: (859) 744-6008
http://www.ekpc.coop

Since EKPC's Barren County Substation has existing 161 kV facilities, and 161kV facilities would provide enough capacity to serve WRECC's load, and since it is the closest EKPC substation to the Warren RECC system, the recommended plan is to build a 161 kV line from the Barren County Substation west to connect EKPC to the Warren system.

This new 161 kV line would connect the Barren County Substation to Warren RECC's easternmost delivery point at Magna. Then, in order to connect this project to the remainder of Warren RECC's delivery points, the following proposed projects were identified:

- Magna-GM – (already exists)
- GM-Memphis Junction
- Memphis Junction-Aberdeen

This plan provides a 161 kV backbone that stretches east to west from EKPC's system at Barren County to Warren RECC's westernmost 161 kV delivery point at Aberdeen, with intermediate connections to the other Warren RECC transmission delivery points.

While this plan provides a contractual path on paper from EKPC to Warren RECC, power flow analysis shows that it does not provide adequate and reliable service. Therefore, additional transmission support is required. The options evaluated for this support are as follows:

- Construct new 345 kV lines and facilities in the area.
  - Construction of 345 kV facilities was eliminated as an option for the following reasons:
    - ✓ The 161 kV line projects connecting EKPC's Barren County Substation to Warren's Magna, GM, Memphis Junction, and Aberdeen Substations would still be required.
    - ✓ At least 23 miles of 345 kV line would be required to connect the northern portion of the Warren RECC system (Leitchfield area) to the nearest 345 kV facilities (Hardin County, KY), which belong to LGEE.
      - ➢ This would also require construction of a new 345/161/69 kV substation facility in the Leitchfield area, and 345 kV substation in Hardin County.
    - ✓ An additional 29 miles of 161 kV line would then be required between the northern portion of the Warren RECC system and the central portion. This plan would cost twice as much as EKPC's proposed plan, and would encumber more new acres of rights-of-way.

- Maintain one or more of the existing 161 kV interconnections – East Bowling Green, Bristow, Memphis Junction, and Aberdeen -- between TVA and Warren RECC.
- Establish new interconnections with TVA in the area.

- Construct new 161 kV lines to the facilities of other utilities in the area. In addition to TVA, both Big Rivers Electric Corporation (BREC) and LG&E Energy (LGEE) have 161 kV facilities between Aberdeen and Wilson.
    - EKPC already has interconnections with LGEE and none with BREC. An interconnection with BREC provides a stronger connection for the Warren system than an LGEE connection, and the BREC connection would also allow EKPC and BREC to conduct energy transactions directly.

Therefore, the preferred plan was determined to be a plan that maintained some of the existing interconnections with TVA and also established a new interconnection with BREC at its Wilson Substation. The TVA interconnections that EKPC proposes to maintain as free-flowing interconnections are those at East Bowling Green and Memphis Junction. In addition, a new 161 kV interconnection with TVA at Salmons is desired.

The interconnection with BREC at Wilson establishes a desired connection between the BREC and EKPC systems and also allows elimination of the existing TVA interconnection at Aberdeen. The elimination of the existing interconnection at Aberdeen benefits TVA by providing them the opportunity to convert the Paradise-Bowling Green 161 kV line to 500kV if ever desired in the future. It also eliminates the need for TVA to maintain the Aberdeen 161 kV tap line off the Paradise-Bowling Green 161 kV line. TVA has indicated that there is significant maintenance cost associated with this tap line, due to the age and condition of the structures.

Therefore, the proposed plan is the optimal plan for the following reasons:

- It connects the EKPC system to the Warren RECC system with sufficient contractual capacity.
- It connects all of the Warren RECC 161 kV delivery points through a continuous 161 kV backbone.
- It maintains existing TVA connections to the Warren RECC system to minimize the amount of line construction required by EKPC.
- It provides sufficient support for EKPC's service to Warren, and it provides a parallel 161 kV system to TVA's existing 161 kV system in the area.
- It allows TVA to eliminate the existing connection at Aberdeen.
- It establishes a connection between the BREC and EKPC systems.

Justification of Delivery Points and Alternatives Considered

As mentioned above, one of the requirements of the EKPC transmission plan for service to Warren RECC is to connect Warren's 161 kV delivery points with a continuous 161 kV path. In past years, TVA offered for sale, and WRECC purchased portions of the local transmission delivery system at 69kV and 161kV. The WRECC system is configured for the delivery of wholesale power, and currently receives wholesale power from TVA, at three primary delivery points. These three delivery points are WRECC's existing East Bowling Green, Memphis Junction, and Aberdeen Substation.

Voltage levels at these locations are transformed from 161kV to 69kV. Because transmission connections must be made between the EKPC system and the WRECC system to provide service, these existing critical delivery points are the most reasonable connection locations for the proposed plan. If they were not used by EKPC, new delivery points requiring the construction of new substations to step down voltage and new transmission paths would be required. Because the WRECC system infrastructure already exists, the end points of the line construction are essentially **pre-determined**. To construct new delivery facilities, as compared to utilizing the existing ones, would be considerably more costly and would create unnecessary impact to the people and resources of the area.

East Bowling Green and GM are adjacent substations connected by a very short 161 kV line on the northeast side of Bowling Green. The Memphis Junction delivery point is on the southwest side of Bowling Green. Therefore, to provide a continuous path from the EKPC system to all of the Warren delivery points, a connection must be established between the East Bowling Green/GM and Memphis Junction Substations. The East Bowling Green/GM Substation would be linked to the Magna Substation to the east, and the Memphis Junction Substation would be linked to the Aberdeen Substation to the northwest.

No practical electrical alternatives to the GM-Memphis Junction line exist. A 161 kV link must be established between the eastern part of Warren's system and the western part. EKPC did consider a 161 kV line from GM to Aberdeen with a 161 kV tap line to Memphis Junction. However, the reliability of this system was determined to be unacceptable, since a single fault anywhere on this three-terminal line would eliminate EKPC's 161 kV connection to Memphis Junction. Therefore, it was determined that two independent 161 kV feeds to Memphis Junction are required to maintain one EKPC 161 kV feed to Memphis Junction during single contingencies.

Proposed Projects

EKPC has identified four (4) transmission line projects as part of its program to provide service to Warren RECC (See attached Warren Transmission Projects Map). These distinct projects are defined by the fixed endpoints dictated by the existing Warren RECC 161kV delivery points. Starting from the east and heading west, the connection must be made between EKPC's system at the Barren County Substation and WRECC's system at the Magna substation. This project is entitled Barren County-Oakland-Magna. The new construction portion of this project will extend to the Barren County Substation providing the connection to the EKPC transmission system. The project will proceed from west to east and will be done in consecutive steps to keep reliable service to the WRECC Oakland and Park City substations. Since the particular backfeed arrangement for the Park City substation is very sensitive to electric load levels, there is a restricted window for some of this work based on seasonal load levels.

Moving further east, the connection between the Magna substation and GM Substation already exists. Therefore the next project is the GM-Memphis Junction project that connects the East Bowling Green/GM Substations and the Memphis Junction Substation.

This project provides the needed backfeeds (voltage source from a secondary system) into East Bowling Green/GM and Memphis Junction Substations. Once constructed this line will allow continued, uninterrupted service to the residents of Bowling Green and the surrounding communities while other projects are constructed.

The next crucial project exists between the existing Memphis Junction Substation and Aberdeen substations. This project as proposed has been named Memphis Junction-Aberdeen. Construction of this line will provide a backfeed to the Aberdeen substation. Once this backfeed is established, proposed work on the Aberdeen substation can be completed. This line will also provide backfeeds into the West Bowling Green and Auburn substations. The West Bowling Green and Auburn substations are located on radial feeds, and the backfeeds into these systems are essential for reliability for those areas during construction.

Lastly, the connection between BREC's system and the EKPC system must be made between the Aberdeen Substation and the D.B. Wilson Power plant. This project has been entitled Wilson – Aberdeen. This will connect the Warren system into the D.B. Wilson Plant in Ohio County. This tie will complete the needed backfeed for transmission into the Warren system. As detailed above, construction of these four projects will provide the reliable electrical service through a 161kV backbone to the Warren System and provide a tie between the BREC and EKPC systems.

Issues Related To Timing of Construction Of The Warren Projects:

There are 4 projects that EKPC plans to construct to provide service to Warren RECC. The work will involve rebuilding of existing lines, paralleling existing lines, and/or construction on entirely new rights-of-way. The preferred order for construction of the proposed transmission line projects is as follows:

1st - GM – Memphis Junction
2nd - Memphis Junction – Aberdeen
3rd - Barren County – Oakland – Magna
4th - Wilson – Aberdeen

EKPC believes it is prudent to construct the GM – Memphis Junction project first for the following reasons:

1) Co-Location – EKPC's proposed alternative for this project would involve rebuilding approximately 8.56 miles or 56.28% of the proposed project. EKPC also proposes to parallel an additional 2.41 miles (~ 15.84%) of line. These rebuild and parallel sections generally require more time to construct than lines on new rights-of-way. Some of the rebuild sections for this project occur in heavily developed areas. Also, rebuilding existing facilities is typically more complicated to construct than construction of lines on new right-of-way for three primary reasons:
   - ✓ Teardown of existing facilities. The material that currently exists on site must be removed and properly disposed.

- ✓ Existing residences and structures. Frequently there are houses/buildings/outbuildings that have been built adjacent to the existing easement since the initial construction of the line.
- ✓ Threats to reliability are created when the existing facilities are taken out of service. The existing facilities are needed and when removed from service, WRECC must rely on backfeeds and procedures that are normally used for contingencies (unexpected problems in the system - fallen tree, transformer failure, etc). Because contingencies can still happen during the time of construction, the removal of the existing lines must be coordinated and their outage time minimized to avoid unacceptable levels of reliability.

2) Reliability – Construction of GM – Memphis Junction first provides the needed backfeeds (voltage source from a secondary system) into the East Bowling Green/GM and Memphis Junction Substations. Once constructed, this line will allow continued, uninterrupted service to the residents of Bowling Green and the surrounding communities while other projects are constructed.
3) Right-of-way acquisition – Far fewer new easements must be acquired for the section of the project that is being rebuilt. Typically the existing easement can be amended and restated to include the current project, and the process is less time consuming.

GM - Memphis Junction

	Length	Percent
Rebuild	8.56	56.28%
Parallel/Co-locate	2.41	15.84%
New Construction	4.24	27.88%
Total	15.21	100.00%

EKPC believes it would be prudent to construct the Memphis Junction – Aberdeen project as the second phase for the following reasons in addition to those cited in the discussion above:

1) The amount of line to be rebuilt is significant. A little over half (51.11%) of the proposed project would involve EKPC rebuilding existing facilities.

2) Construction of this line will provide a backfeed to the Aberdeen substation. Once this backfeed is established, proposed work on the Aberdeen substation can be completed. Again, in order to provide an appropriate level of system reliability, work on existing lines and terminal improvements must be carefully coordinated and sequenced.

3) Construction of this line will provide backfeeds into the West Bowling Green and Auburn substations. The West Bowling Green and Auburn substations are located on radial feeds, and the backfeeds into these systems are essential for reliability for those areas during construction.

Memphis Junction - Aberdeen

	Length	Percent
Rebuild	14.09	51.11%
Parallel/Co-locate	0.00	0.00%
New Construction	13.48	48.89%
Total	27.57	100.00%

It would be prudent to construct the Barren County – Oakland – Magna project as the third stage of line construction for the following reasons:

1) A significant percentage (nearly 59%) of the project will involve rebuilding existing (53.52%) facilities and paralleling (5.28%) existing lines. This line will be built in phases to provide continued reliability and prevent loss of service to existing customers in the area.
2) The project will proceed from west to east and will be done in consecutive steps to keep reliable service to the WRECC Oakland and Park City substations.
3) Since the particular backfeed arrangement for the Park City substation is very sensitive to electric load levels, there is a restricted window for some of this work based on seasonal load levels.
4) The new construction portion of this project will extend to the Barren County Substation providing the connection to the EKPC transmission system.

Barren County - Oakland - Magna

	Length	Percent
Rebuild	15.20	53.52%
Parallel/Co-locate	1.50	5.28%
New Construction	11.70	41.20%
Total	28.40	100.00%

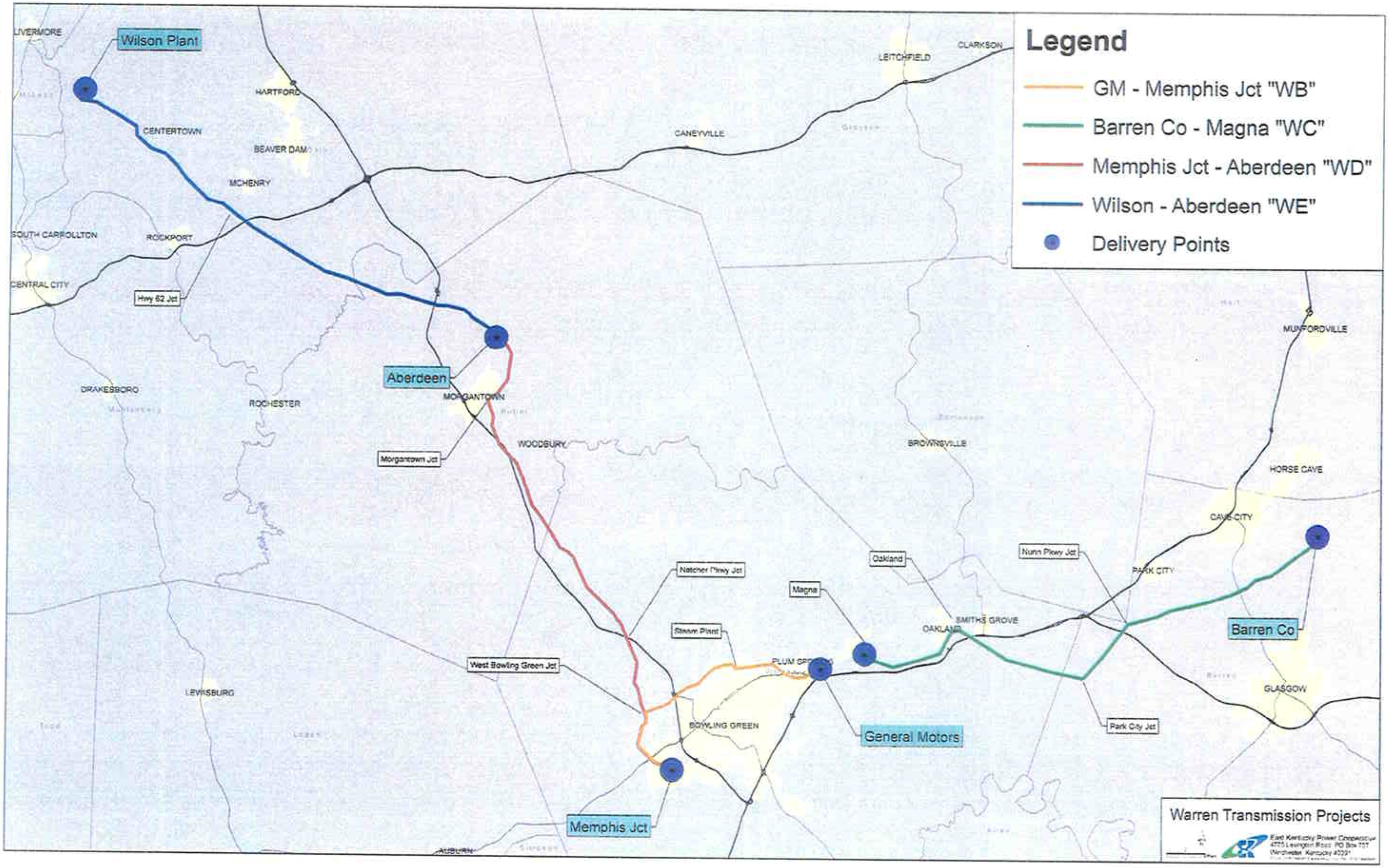
The Wilson – Aberdeen project is proposed to be constructed last. EKPC believes it would be prudent to construct this line last for the following reasons:

1) This line will be entirely new construction, therefore, easier to build without interruption or critical system coordination concerns. It will parallel an existing line for approximately four miles. Construction of this facility will not require removal of existing facilities. Therefore, it will not pose a threat to reliability in the area.
2) Since this is new construction, acquisition of easements for rights-of-way typically takes longer. Construction of this proposed project last would provide an opportunity to acquire the necessary and appropriate easements.

3) This will connect the Warren system into the D.B. Wilson Plant in Ohio County. This tie will complete the needed backfeed for transmission into the Warren system.

Wilson - Aberdeen

	Length	Percent
Rebuild	0.00	0.00%
Parallel/Co-locate	4.13	15.41%
New Construction	22.67	84.59%
Total	26.80	100.00%


Legend
GM - Memphis Jct "WB"
Barren Co - Magna "WC"
Memphis Jct - Aberdeen "WD"
Wilson - Aberdeen "WE"
Delivery Points
Wilson Plant
Aberdeen
Memphis Jct
General Motors
Barren Co
Hwy 62 Jct
Morgantown Jct
West Bowling Green Jct
Natcher Pkwy Jct
Steam Plant
Magna
Oakland
Nunn Pkwy Jct
Park City Jct
LIVERMORE
CENTERTOWN
HARTFORD
BEAVER DAM
MCHENRY
SOUTH CARROLLTON
ROCKPORT
CENTRAL CITY
CANEYVILLE
LEITCHFIELD
CLARKSON
DRAKESBORO
ROCHESTER
MORGANTOWN
WOODBURY
BROWNSVILLE
MUNFORDVILLE
HORSE CAVE
CAVE CITY
PARK CITY
SMITHS GROVE
OAKLAND
PLUM SPRINGS
BOWLING GREEN
GLASGOW
LEWISBURG
AUBURN
Warren Transmission Projects